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Lighter Metal for Machine Tools

Heavy Castings Avoided by Use of Fine-Grained Iron—Attention to Physical Properties of Prime Importance

BY J. W. BOLTON*

MACHINE tools have been aptly called master tools of industry. They vary in size from tools such as small drill presses weighing under a hundred pounds to giant tools which, completed, may weigh around half a million pounds. They may be highly specialized automatics capable of producing only one shape, with the operator feeding stock in at one end and the finished part coming out at the other, or they may be general purpose tools capable of handling a wide variety of work. In the metal cutting industry the railroads and automotive shops are the largest individual buyers. The variety of uses of machine tools is large, as they are the tools with which all machinery is made.

Heaviness in Tools Popular

The vast bulk of the material of which machine tools are made is cast iron, i. e. gray cast iron and semi-steel. Machine tools were made long before accurate knowledge of the properties of cast iron was available. The cut-and-try method of design was the only one practical. Whenever a part failed, the next time it was made heavier. This idea was sold to the trade and machine tool competition became based on weight. This idea has its merits, but in many instances it has served as a dampener to progress. Performance is the only sound basis of machine tool value. The customer is after service and this service depends upon:

DESIGN
WORKMANSHIP
MATERIALS

Obviously the most important of these is design. It is like the old story about what a man is worth from his neck up compared to his value from the neck down. Unlike the man story, however, the "neck-down" parts of a machine tool, workmanship and material, if bad, nullify the "neck-up" value, design. Take two tools of similar design and equal workmanship, it is easily seen that the tool with better materials will withstand greater overloads, maintain rigidity, wear better and last longer.

Today we find the attention of gray iron castings buyers directed toward quality of material. To a degree this is true of machine tool buyers, particularly those who ask for bids on tools of their own design. In this case competition is purely on workmanship, materials, delivery and price. Most machine tool makers are increasing their usage of alloy steels, and a few of the more progressive are trying to produce quality irons or to buy them.

Tool Quality Raised by Physical Standards

What can be done to help the quality of the tool by raising the physical standards of the casting? To answer this it is necessary to consider the duty which is demanded. Rigidity is a most important mechanical requirement. Ultimate strength to resist heavy loads is another. On certain parts ability to resist wear is needed. Parts of the driving mechanism, or moving parts like gears, spindles, etc., require some degree of toughness. Machinability is an economic factor and finish affects appearance. Ordinary grades of gray iron do not meet all the above requirements. Although still largely used, the old two or two-fifty silicon and three-fifty carbon iron is very poor material for medium and heavy tool castings.

Rigidity.—By rigidity in machine tool construction is meant freedom from bending or giving under load, and the absence of vibration or chatter. The accuracy of a machined job rests in large measure on the accuracy of the tool. If a boring bar or a spindle drifts, an exact cut is improbable if not impossible. If there is give in a cross rail, a true surface is unlikely. Chatter will cause poor finish and materially decrease the ultimate cutting rate. To secure rigidity, the design and workmanship must be good. Properly chosen materials are essential. As will be explained later, high-test irons deflect less for a given load and therefore add to rigidity.

Tensile Strength.—High ultimate strength is desirable. Breakdowns are expensive. Large machine tools are expensive, and their idleness costs. What is worse, in a production line each tool is a link in a chain of operations. The failure of a single unit may tie a whole machine line up.

Wear.—Bearings or sliding parts may be scraped-in ever so carefully, but a very little wear will nullify the value of all this care and expense. For a familiar example, take a planer table. If, either through repeated travel over a short portion of the ways or through inequalities in wear, the travel line is made inaccurate, the machine will be incapable of accurate work over its complete travel.

Use of Steel and Alloy Steel Advocated

Toughness.—By the term toughness, we mean ability to resist shock and to withstand the effects of fatigue. To attain this property, some manufac-

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turers have substituted steel for cast iron, formerly used in many parts of the driving mechanism, and are using alloy steel in place of carbon steels. With the latter trend the author is in full accord. With the former there are reservations. Weight is an important consideration in design of machine tool driving parts. A certain amount of "flywheel effect" is desirable. This results in a more uniform application of load and less pulsation transmitted in either direction—point of generation or point of application. Therefore, cutting down in weight is questionable. For certain moving parts, high-test cast iron gives excellent and economical service. Poor grade material has given much trouble, and has in a measure justified the too broad assertions of some of our foreign competitors, who have stated that after a few years' service all that may be left of an American machine tool is the nameplate.

Machinability.—Machinability is a factor that should not be slighted in production of a quality tool. An unmachinable iron is poor material for tool construction. The presence of free cementite embrittles and otherwise damages high-test metal. An iron that can be hogged too readily is open-grained, is not tough, and will not wear well. A good tough iron requires fewer finishing cuts to give a good surface. The author has seen marked increases made in metal strength without increase in overall production time.

Finish.—Finish is quite important. Open grained metals, so widely used, do not wear well. Particles of dirt lodge in the small pits and start scoring. The graphite contained in the pits is not a true lubricant, because of the small, gritty particles of metal contained in it. The author has sieved this material out and found it quite abrasive. The metal edges of the pits break off readily. Such an open grained surface does not maintain an appreciably better oil film than a surface with good finish. The open grained surface is soft and rough and wears rapidly.

An Ideal Material Suggested

A fine grained iron, of nearly pearlitic matrix, is an ideal material for machine tool construction. The exact composition required of course varies according to the section of the casting in question. In general the lower the total carbon, the better. Lower total carbon gives stronger, tougher iron. The effect of carbon is more marked in heavier sections, as is indicated by the diagrams, Figs. 1, 2 and 3. Carbons from cupola irons should always run under 3.30 per cent, and close to 3.00 per cent is preferable. Silicon should be adjusted according to section size. For sections with a minimum of 1 in. thickness, good results are usually attained with silicon under 1.25 per cent, skin-dried molding practice. Phosphorus should be well under 0.50 per cent. High phosphorus irons of high strength are difficult to machine and may not finish well. Phosphorus increases brittleness and decreases resistance to shock. Sulphur should be kept fairly high for heavy sections.

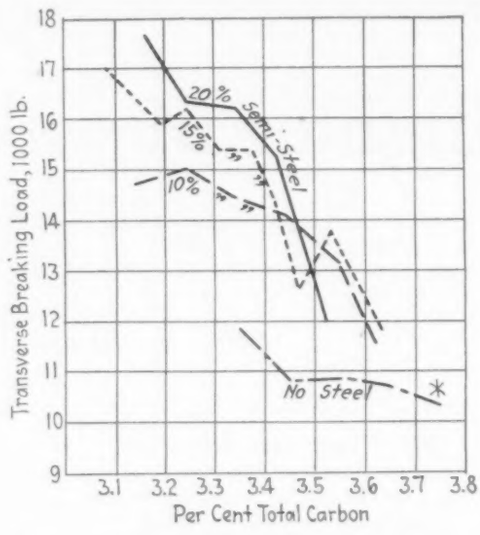
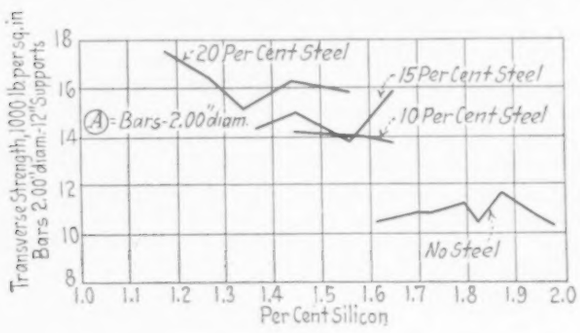


*Fig. 1—Effect of Carbon on Transverse Breaking Load on Bars 2 In. in Diameter. *The effect of higher silicon is to thrust the curve toward the left*

The author has seen excellent castings made, using as high as 0.18 per cent sulphur. As long as the melting conditions are properly regulated and a proper sulphur-manganese ratio maintained, higher sulphur helps in the production of a close grain. It is probable that the next few years will see the wider utilization of alloy irons. Nickel especially seems to promise much, in that it does not destroy the carbon of pearlite, yet has a more uniform action on chill areas than silicon does.

As is the case in the production of any quality metal, it is careful, practical and scientific control which counts. The shop minus laboratory equipment



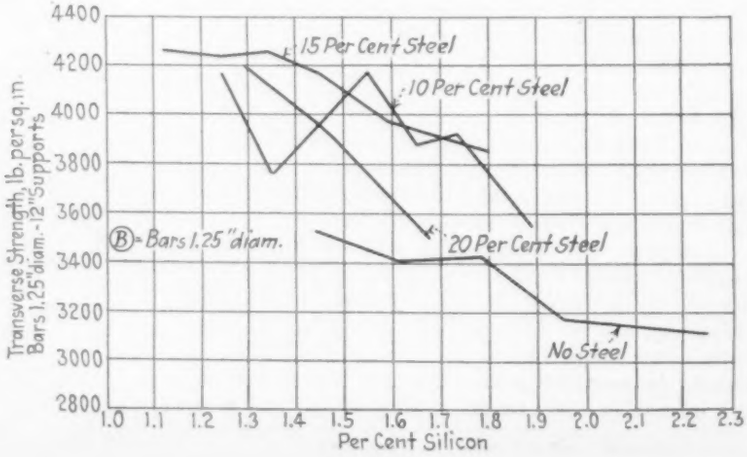


Fig. 2—Effect of Silicon on Irons of Approximately Constant Carbon Content. About 150 bars represented. Fig. 2A (upper) represents bars 2 in. in diameter; Fig. 2B (right), bars 1¼ in. in diameter

and the services of a trained metallurgist cannot be expected to produce really high-grade material.

Uniformity of Section Desirable

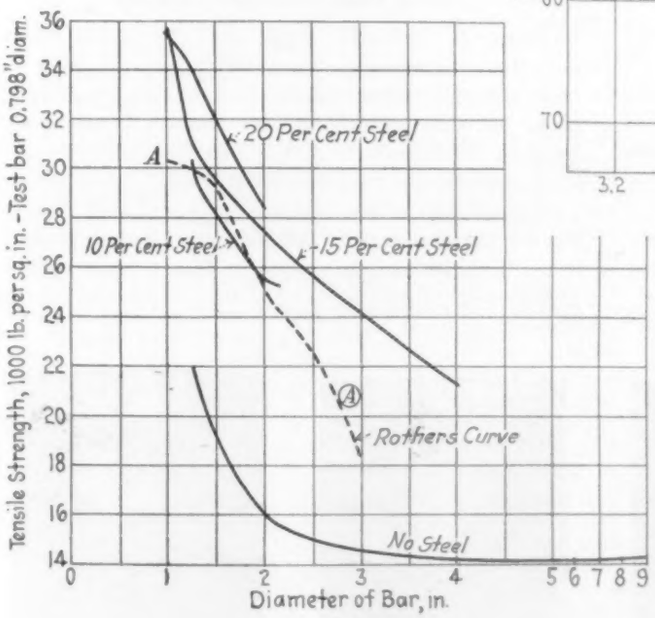
Active cooperation of the engineering department is necessary. Unfortunately, many machine tool castings are designed improperly from a metallurgical viewpoint—and unnecessarily so. Uniformity of section size is very desirable. There are two reasons for this. First, the quality of metal it is possible to use is determined largely by the size of the smallest section. (See Fig. 4.) If a composition proper for the heavier sections is used, large, thin sections may be chilled, brittle, hard and weak. This makes it imperative to adjust the material for maximum strength in the lighter sections, and allow the heavier sections to come where they will. Of course it must be remembered that the heavier section will retard the cooling rate of the lighter. Therefore, it is possible to use different metal than would be used in such a light section cast by itself.

Second, the junction of a heavy, with a thin section, increases the likelihood of a shrinkage defect. Often thin webs are used to stiffen heavy sections. These fail many times to accomplish their purpose. At the juncture of thin and heavy sections, there is a cavity and spongy area which possesses practically no strength. The undesirability of the resultant weakness is obvious.

The strength of metal as used in many heavy tool parts can be raised 100 per cent or more. Few engineers and designers realize this. This sounds rather startling, nevertheless it is conservative. It is as great a difference as exists in the possible strengths of most plain and alloy steels. It is an actual fact that the metal, as used in many heavy sections, will not reach 12,000 lb. per sq. in. tensile strength. It is not particularly difficult to produce metal 25,000 to 30,000 lb. per sq. in. tensile strength in such sections. High-test irons usually are cheaper in raw materials cost. More scientific control is needed and such iron offers more difficult foundry problems.

The possibility of making higher duty tools, which weigh less, should appeal to every designer. There are several pitfalls for the unwary who cut down weight without most careful consideration. The laws of section moduli are operative always. Reduced to their simplest form, these mechanical principles may be stated as follows: When any transverse force is applied at right angles to a beam section, the ultimate resistance of the beam is directly proportional to its width (a plane at right angles to the line of stress) and to the square of its height (a plane parallel to the line of force). Cast iron rarely fails in compression. Resistance to compression is somewhere around 10 times resistance to tensile pull. In tensile pull the non-tenacious graphite flakes are paths along which rupture can take place with comparative ease. However, these flakes resist compression very well. Silica sand, for example, has no tenacity. If held in a suitable container, it is impossible to compress it very much.

Fig. 4 (Below)—Relation Between Size of Bar and Tensile Strength. Note: There seems to be some tendency for bars of larger diameter to have lower carbon in their centers. (A) is plotted from data given by Willard Rother, THE IRON AGE, *Aug. 7, 1924. Table I, "Bars Cast on End." His analysis is Si. 1.35, Mn. 1.15, C. 3.74, S. 0.075, P. 0.20 Per Cent. Test bars were 0.505 in. diameter*


Tensile Strength, 1000 lb. per sq. in. -Test bar 0.798" diam.
Diameter of Bar, in.
20 Per Cent Steel
15 Per Cent Steel
10 Per Cent Steel
A
Rothers Curve
No Steel

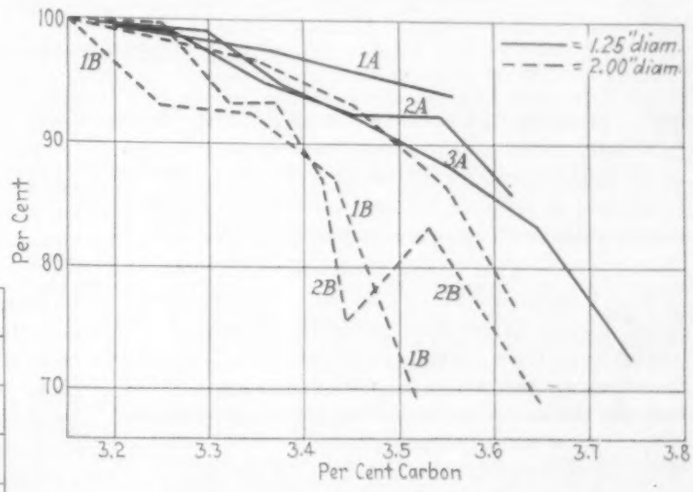


Fig. 3 (Above)—Per Cent Change in Transverse Strength With Increase in Carbon.

Assumption:

1. For 20% semi-steel take A { 4200 / B { 17,500 as 100% on { 1.25-in. bar at 3.15% C / { 2.00-in.
2. For 15% semi-steel take A { 4400 / B { 16,500 as 100% on { 1.25-in. bar at 3.15% C / { 2.00-in.
3. For 10% semi-steel take A { 4400 / B { 15,000 as 100% on { 1.25-in. bar at 3.15% C / { 2.00-in.

Note: For all practical purposes the "no steel" curve (omitted) has the same qualitative significance as those charted. The essential thing demonstrated is that carbon has greater influence in heavier sections.

Transverse Strength Important

For most purposes the most important physical property of gray iron is its transverse strength. True tensile stresses are met with rarely; because of the rigidity of cast iron, any tensile stress, not most accurately alined, really causes a cantilever effect. Moduli of rupture of cast iron beams are somewhat higher than would be expected from tensile values. A reason for this is that in solid sections, gray iron does not exhibit those properties of uniformity and elasticity demanded by beam formulæ. The neutral axis is displaced during application of stress.

Bearing the above considerations in mind, lighter sections can be used successfully. The author expects to see wider utilization of hollow sections, of channeled beams, and similar devices replacing many of the old heavy solid sections. Many of these latter

deflect so much under their own weight that they are never truly rigid.

Someone once facetiously remarked: "If automobiles were built on the same principles as machine tools, all of us would be riding around in locomotives." True, no real parallel exists, but there is some degree of justice in the remark. The future will demand better tools. These will embody advanced design, high-grade and standard workmanship and uniformly high-grade materials.

The old soft, weak, open-grained irons will be entirely displaced by tough high-test material. Quite possibly gray iron will regain its place in many parts now made of steel. So progress will be made in better usage of an improved old-time material, used in an improved old-time product.

Detecting Silicon in Iron by Etching*

Iodine Solution Recommended by a German Metallurgist as Reliable—Effect of Other Elements in the Presence of Silicon

P. OBERHOFFER describes in *Stahl und Eisen*, Sept. 2, 1926, some experiments using iodine as an etching reagent for silicon in iron. The solution found best is an alcoholic one, 1:10, of 0.1 per cent normal iodine with an etching time of 5 to 15 min.

Four Alloys Examined

Fig. 1 shows results on four melts of iron-oxygen alloys of about 0.1 per cent oxygen deoxidized with 0.2, 0.6, 1.2 and 1.8 per cent silicon respectively. The solution discovers two zones, the dark homogeneous lower part and the upper part containing bright spots which, under higher magnification, appear as etch cavities. With increasing silicon the dark area decreases.

The analysis shows a decided difference between the two zones, as indicated by the following analyses:

Melt 100, Top 1.48 per cent Si. Bottom 0.009 per cent Si.
Melt 97, Top 1.15 per cent Si. Bottom 0.11 per cent Si.

Fig. 2 shows results using the reagent on alloys containing other elements as described. This brings out clearly the fact that the results are due to silicon alone.

Solution Does Not Attack Silicates

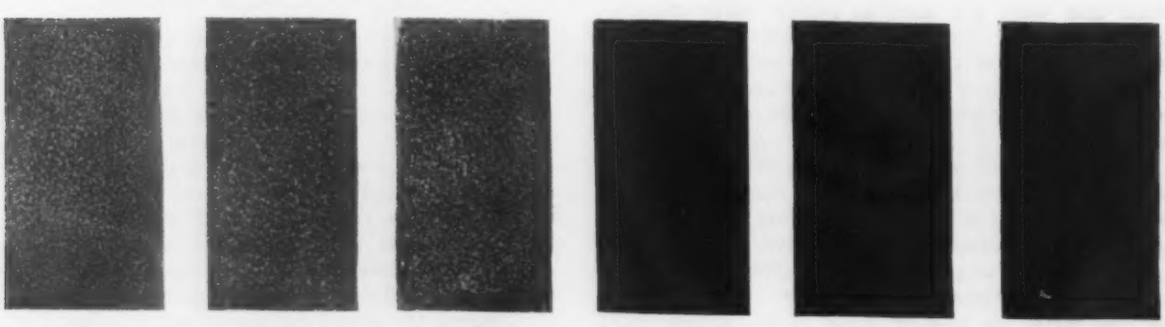
Professor Oberhoffer states that the solution does not attack silicates, but that direct proof is lacking as to its inertness toward oxides, as it was not possible to make an alloy containing less than 0.05 per cent oxygen. He believes that it is inert and that the reagent attacks only the silicon-iron alloy.

The original article contains an interesting discussion on the slow rate of diffusion of silicon in molten iron. These melts, represented in Fig. 1, were heated to 1600 deg. C. and held for 7 min. after the silicon addition.

*Abstracted by James MacKenzie, metallurgist American Cast Iron Pipe Co., Birmingham.

Si.-0.20 Si.-0.60 Si.-1.20 Si.-1.80

Fig. 1—Iron-Oxygen Alloys Deoxidized with Varying Amounts of Silicon



Si.-0.48 Mn.-0.80 O_2-0.07 C.-0.87 | Si.-0.38 Mn.-0.80 O_2-0.13 C.-0.71 | Si.-0.43 Mn.-0.00 C.-0.53 | Si.-0.00 Mn.-0.00 C.-0.46 | Si.-0.00 Mn.-0.85 C.-0.64 | Si.-0.00 Mn.-0.00 C.-0.58 Al.-1.00

Fig. 2—Iodine Etching in the Presence of Varying Contents of Silicon, Manganese, Oxygen and Carbon

Making Coal Flow Like Water

Extremely Fine Pulverization Accompanied by Heat—Air Must Be Excluded—Using With Oil as Fluid

COAL, when pulverized to pass a very fine mesh, can be made to flow and seek its own level. This has been learned by experiments conducted by Walter E. Trent, president Trent Process Co., New York. He read a paper on the subject of fine pulverization of coal before the International Coal Conference on Bituminous Coal, held last month at Pittsburgh, under the auspices of the Carnegie Institute of Technology.

Partly Accidental Discovery

Like most other discoveries, this one came from a definite attempt to do certain things which had little to do with the ultimate issue. Mr. Trent was investigating means whereby fuels of the widest possible range could be burned under pressure in a closed container or generator; means whereby the products of combustion could be so reduced in temperature by adding air or steam that they could be used in a reciprocating engine; development of an engine combining a compression unit and a power unit, to supply air and to expand the products of combustion for generating power; and means for utilizing heat from the jacket and exhaust, to raise the temperature of water or to produce steam for mixing with products of combustion.

It was soon found that use of this process for more than a short time was out of the question, because of the accumulation of ash. This fact resulted in a number of experiments in the pulverization and amalgamation of coal.

Obtaining the Requisite Fineness

While the hammer mill, which reduces coal to ¼ in. or finer, produces an ideal size to fit standard tumbling barrel types of pulverizers containing rods or balls, this is better suited to make a product which will pass a 20-mesh sieve than one which will pass a 200-mesh or finer.

For the latter purpose an electric vibrator pulverizer has been devised, with pulverizing elements smaller than in a rod or ball mill. Instead of being cascaded in a barrel, these are vibrated vertically at the rate of 60 times per second. Ordinarily the amplitude of vibration is about ⅛ in., although this varies. The container, resting on rubber pads, is fastened to a floor on the under side of which is fastened the electric vibrator. By the use of this mechanism material can be produced running up to 500-mesh or even, on occasion, to 1000-mesh fineness.

Anthracite coal reduced to 300-mesh will burn with about the same freedom as bituminous coal at about 200-mesh. As anthracite is hard, its pulverization is both slow and difficult. It must be pulverized to a greater degree than bituminous coal, because of the density of its particles and their lack of hydrogen.

Some of the Advantages

Shorter fire boxes and furnaces become possible with finer grinding of bituminous coal. After the coal passes the 300-mesh the fire box may be made of the same height and length as that used in burning oil. This shortening of both fire box and furnace should be of great advantage in adapting pulverized coal to use by the railroads and on steamers.

When pulverized to such a fine degree the coal, Mr. Trent asserted, "can be made to flow and seek its own level." Merely heating finely pulverized bituminous coal so that vapors are generated gives the coal such a condition of fluidity that it follows the general laws of liquids. When it becomes possible to treat coal as a liquid instead of as a solid, the coal industry and the technique of the use of coal will undergo a radical change.

Extraneous air should not mingle with the powdered coal. It is even desirable, if not necessary, that the air ordinarily occupying the spaces between particles should be driven off. The best way to exclude that air is to heat the coal until the vapors (either chemical water or hydrocarbons) which it emits displace the air surrounding each particle.

Utilizing Coking Coals

Coking coals tend to agglomerate and thus interfere with the process. There are, however, two ways of utilizing coking coals in a flowing retort: The pulverized coal may be preheated and agitated in the presence of air, or it may be heated slowly as it flows in a gently moving stream. In the latter case, with complete devolatilization occurring at every stage of the gradually increasing temperature, the expelled vapors are compelled to travel with the slowly moving particles and pass around them. This action prevents agglomeration.

Coal to Act as a Gas

Coals having 35 per cent of volatile matter or more can be made to travel as a gas, the vapors entraining and carrying minute carbonized particles. So long as this vaporous mass is not permitted to cool, and thus undergo partial condensation, it answers the laws of gases. It contains more heat units per cubic foot than the richest natural gas. It is adaptable to use in internal combustion engines for generating power. In this form it is, for all practical purposes, vaporized coal.

Naturally, coals which are to be burned in suspension should be relieved of their ash. This is needed, to avoid discharging dust into the atmosphere, where already it is causing trouble.

An amalgamating process making a super-fuel was described as part of the paper. By pulverizing coal finer than 350-mesh it can be made to take oil and retain it in about equal weights of coal and oil. This liquid emulsoid can be pumped and handled like ordinary fuel oils. It could be used for steam raising or for cracking into motor fuels for internal combustion engines.

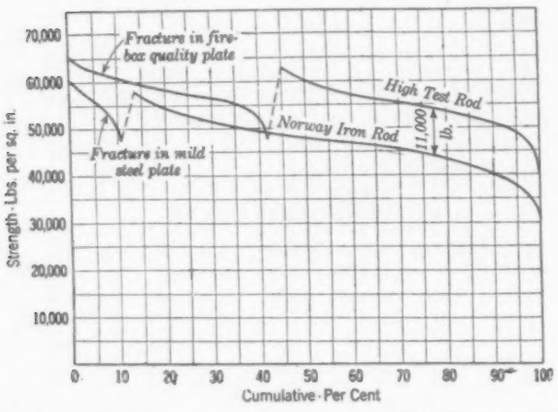
Coal Stocks Increasing

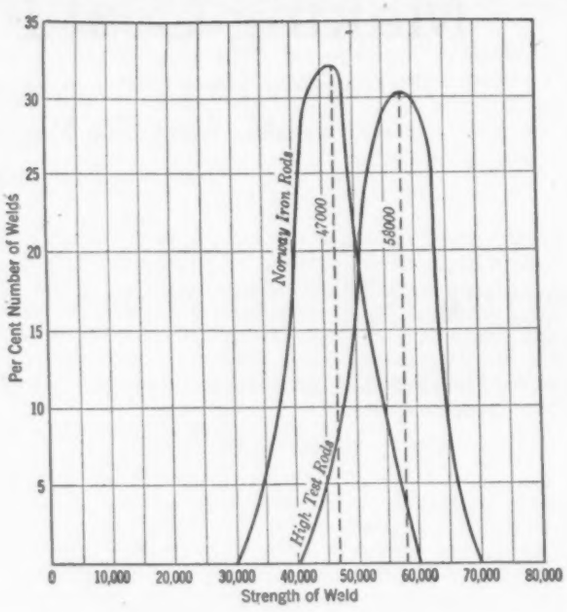
Stocks of bituminous coal in the hands of industry on Nov. 1 are reported by the National Association of Purchasing Agents at 45,535,000 net tons, an increase of nearly 3 per cent from the 44,271,000 tons of Oct. 1. Industrial consumption during October is placed at 41,115,000 tons, thus indicating that the amount on hand Nov. 1 is a supply which might last 34 days. Both consumption and stocks have been increasing steadily since spring, the gain from June 1 in stocks having been nearly 12,000,000 tons.

Production of bituminous coal in October reached 54,592,000 tons, which creates a new record for any month. Adding anthracite, the total coal production of the month was 63,267,000 tons.

"Copper Bearing Steel Resists Corrosion" is the title of a treatise by Robert D. Snodgrass, consulting engineer, which was published recently by the Truscon Steel Co., Youngstown, Ohio. It contains fact, figures and photographs showing the rust-resisting properties of steel containing a percentage of copper, the conclusions being based on tests recently made by prominent metallurgists of steel companies and railroads.

EXAMINATION of Welds for Strength. Fig. 1 (Below) Shows Results of Tests With Varying Grades of Welding Rod. Fig. 2 (Right) Indicates the Method of Determining the Most Probable Average Ability of the Welders.





Ultimate Strength of Single-Vee Welds*

Summary of 500 Tests Made on Welding Done in Many Railroad Shops During the Past Six Years

RESULTS of a series of engineering tests become of more general application, and acquire a higher degree of accuracy, as the influence of accidental variations becomes submerged in a great mass of data. To know something about the skill of 100 welders is of much more value than to know that an occasional workman can do excellent work. Averages of results gathered from 50 shops scattered all over the United States are almost sure to eliminate the influence of sporadic variations in practice, one way or another. Continual testing over a period of years prevents the possibility that the workmen were keyed up to unusual efforts.

Such a test (almost ideal) has been completed by Union Carbide & Carbon Research Laboratories, New York. Operators employed in various railroad shops in the country, 75 or 80 in number, were tested at intervals. From 1920 to 1923 the welding rod used was that known commercially as "Norway Iron," really a first-class low-carbon steel. During the last three years a rod known as "high-test rod" (containing about 0.20 per cent carbon, high in silicon and manganese) was the standard.

How the Welds Were Made

Pieces of plate about a foot long were taken from railroad stock and welded in the course of regular work with a single-vee butt weld. The plate then was sent to the laboratory, where it was cut into strips, all reinforcement ground off so that the weld was equal in thickness to the plates it joined, and the strips then pulled apart in a tensile testing machine.

These tests, about 500, are segregated into those which broke the plate, and those which broke the joint. The individual results are plotted in Fig. 1 in order of decreasing magnitude. Horizontal ordinates represent cumulative per cent of total.

The early three years on Norway iron showed that only about 11 per cent broke the plate, which was supposed to be of good quality, and which actually averaged 53,000 lb. per sq. in.

In later work on high-test rod, it was found immediately that only the best of flange steel should be used for test metal; even so, nearly half the specimens broke the plate rather than the weld. Fig. 1 also shows without doubt the influence of high-quality welding materials. Men of all grades of ability are able to increase the strength of joint by some 11,000 lb. per sq. in., merely by using better welding rod. Since the least skillful man is the shop's weakest link, so to speak, this is a most important consideration.

To Determine the Proper Strength Figure for Design

One question yet remains to be answered. From this mass of data, what figure should be selected as representing the average tensile strength of weld metal, a safe figure to use for design purposes? It would be as unfair to use the lowest value reported as it would be to use the highest value, or for that matter to assume that fire-box quality steel should be figured at less than 50,000 lb. per sq. in. (since one of these test specimens broke the plate at that low figure).

Mathematicians answer such questions as these by replotting the data in the form of a "probability curve," as in Fig. 2. The number of test pieces which fall within a certain range are plotted vertically at a distance to the right representing the mid-point of the range in question. The peak of such a curve represents the most probable value; if it varies much from the theoretical shape, its form suggests undue influence of disturbing factors.

In plotting Fig. 2, the strength of joint in those pieces which broke the plate was assumed to be 5000 lb. per sq. in. greater than the strength of the unwelded plate.

It indicates that the expected strength of single-vee oxy-acetylene welds, all reinforcement ground off, and made by operators selected with reasonable care, is as follows:

Using Norway iron welding rod, 47,000 lb. per sq. in.
Using "high-test" welding rod, 58,000 lb. per sq. in.

The factor of safety selected from each individual design would take into consideration the poorest joint in the lot. But, for either variety of welding rod, this is well above the elastic limit of low-carbon steel suitable for welding. Therefore, elastic limit of the base metal would be the ruling consideration in the selection of a factor of safety to apply to the ultimate strength of the joints described.

*From data of Linde Air Products Co.

Continuous 42-In. Blooming Mill

Ford Plant, Using 1500-lb. Ingots, Expected to Produce 100,000 Tons per Month—Unique Housings and Manipulators

CLAIMED to have a greater capacity than any blooming mill ever built, 100,000 tons per month in billets or slabs, The Ford Motor Co., Fordson, Mich., has placed in operation a 42-in.-32-in. semi-continuous blooming and billet mill. This is the first Morgan semi-continuous blooming mill of this type, although the Morgan Construction Co. has built a number of mills classed as continuous mills for rolling billets and sheet bars, merchant bars and other forms of finished steel.

There are four 42-in. stands on which ingots are rolled down to 6½-in. x 6½-in. blooms, and four 32-in. stands that are duplicates of the others except in size, in which the blooms are rolled down to 3⅞-in. x 3⅞-in. or 5½-in. x 5½-in. billets or 8-in. x 2-in. slabs.

The plant is using 1500-lb. ingots, as mentioned in the article on the Ford open-hearth plant in THE IRON AGE, issue of Dec. 2, page 1539. This size of ingot was adopted in the belief that, with the small ingot, a better grade of alloy steel would be produced than if the ingots were cast in larger size. The mill is laid out so that two additional 42-in. stands can be added, in case the size of the ingot is increased to 3000 lb., and space is provided for the installation of a reversing blooming mill should the ingot size be changed to 6000 lb.

Nickel steel posts, replacing the usual massive steel housings, represent a radical change in mill design. But the comparatively small unit is equal in strength to mills having housings of the usual design.

Among the many interesting features of the plant is the method adopted for handling ingots from the soaking pits through a mechanically operated tilter and chute, which has eliminated the usual ingot chariot car for delivering ingots from the pit furnaces to the ingot run.

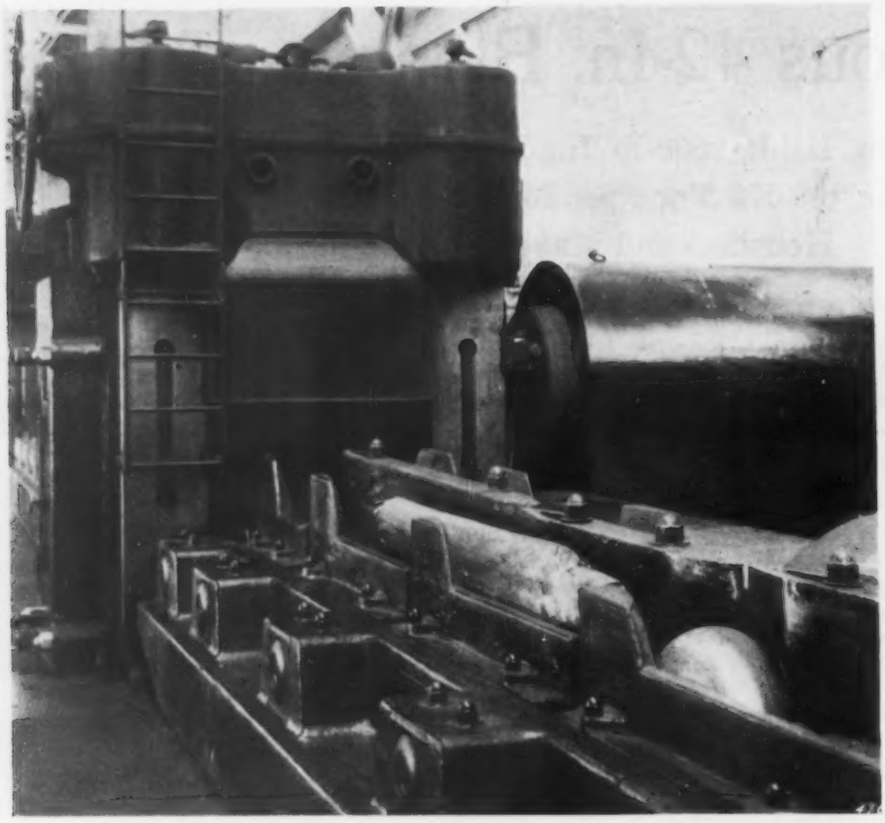
Located between the open-hearth plant and the blooming mill building, which together extend in a straight line half a mile long, the soaking pit building extends at right angles to both. There are four 4-hole pit furnaces and twelve of the 1500-lb. ingots can be charged into each hole. The soaking pit building is so designed that two additional soaking pits can be added. Until additional pit furnaces are provided the maximum capacity of the mill cannot be reached.

The pit furnaces are of the regenerative type, oil fired, with flue connections to the stack below the floor line. Each furnace is served by a 155-ft. steel stack connected to the flues by brick-lined steel headers. A track extends beneath the center of the pits for a car in which slag and scale are dumped from the pit bottoms.

Unique Handling of Ingots

Ingots are not stripped in the stripper building, but are only loosened from their molds, as brought out in the article on the open-hearth plant. They go to the soaking pit building in their molds on the ingot cars on which they were poured and there are lifted from the molds with the soaking pit crane. The ingot, after soaking, is placed by the crane in the tilting cradle in

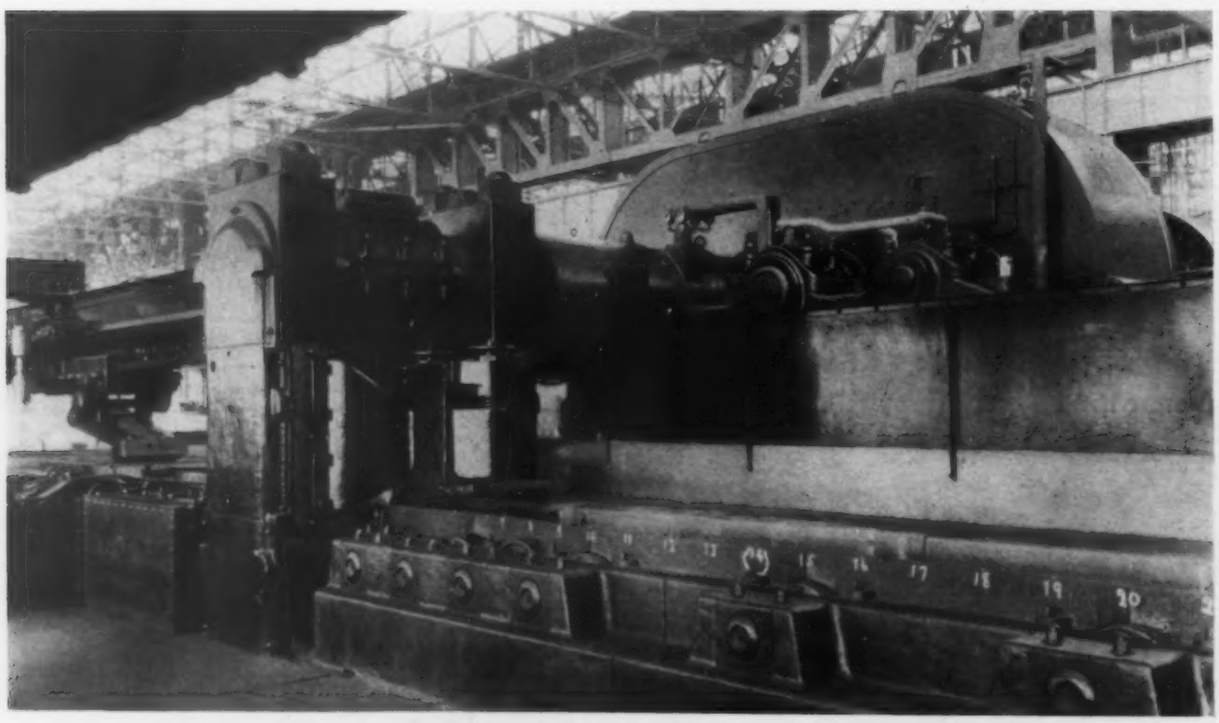
In Place of the Usual Ingot Chariot Are a Tilting Cradle Above the Soaking Pits, a Gravity Chute Between the Pit Furnaces and a Live Roller Table Back of the Soaking Pits That Forms a Continuation of the Billet Run. This picture shows the bottom of the chute between the pit furnaces and the table on which it discharges at the back of these furnaces



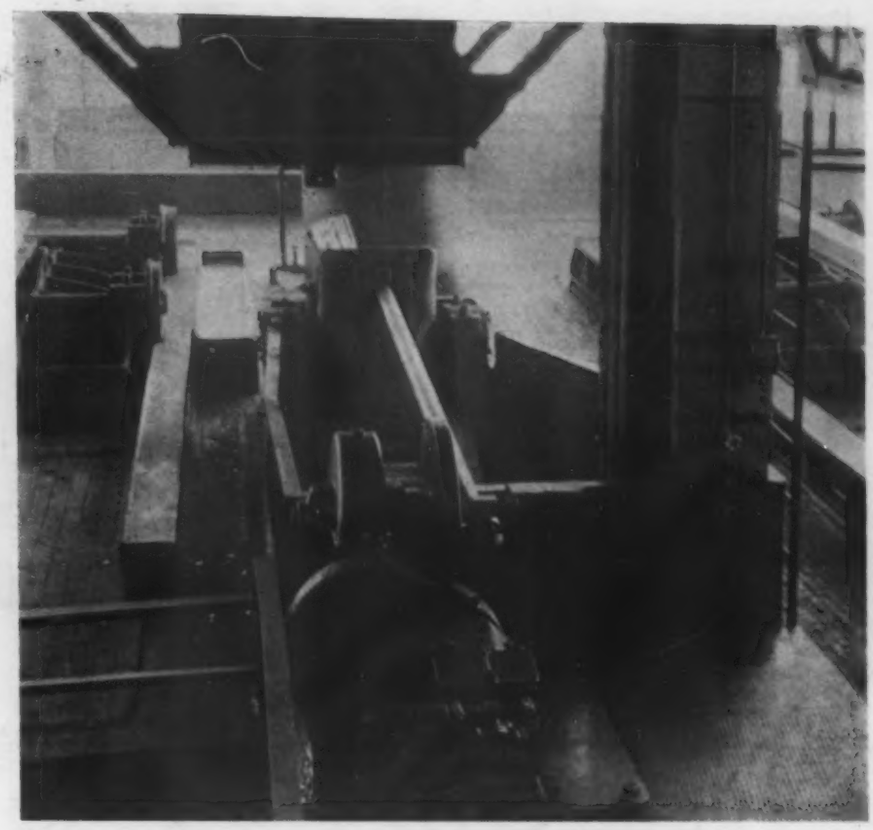
One of the 42-In. Blooming Mill Stands, Showing the Nickel Steel Posts That Have Replaced the Usual Massive Mill Housings. The bearings are set between the posts and there is a cast steel cover over the ends of the rolls and bearings on the working side. The cap is of cast steel

a vertical position. This cradle, located just above the furnace top, connects to a chute between two furnaces. The chute has roller bearing gravity rolls. After the ingot is set in the cradle the latter is tilted backward and the ingot slides down the chute, which makes a 90-deg. turn and connects at the bottom with a live roller table that extends along the back of the pit furnaces, then turns at right angles and extends to No. 1 pass of the 42-in. mill.

Forward and backward movements of the cradle are effected by a crank and connecting rod, the latter connecting the crank with the tilter. The crank is motor operated through a limit switch and its control is from a platform at the back of the furnaces, from which the furnace covers are operated. There are rolls on the side of the cradle in which the ingot rests when tilted and which cause it to start its slide into the chute. The gravity rolls in the chute are 12 in. in diameter and 2 ft. long. Only one cradle and chute are operated at present, but eventually one of these units will be provided for each furnace, each connected to a common run-out table at the back of the furnace. This table is of sufficient size and speed, its speed being 600 ft. per min., to handle the ingots as fast as they



Billets Are Cut to Length on a 600-Ton Electrically Driven Shear That Will Cut Six 3⅞-In. Square Hot Billets at a Time



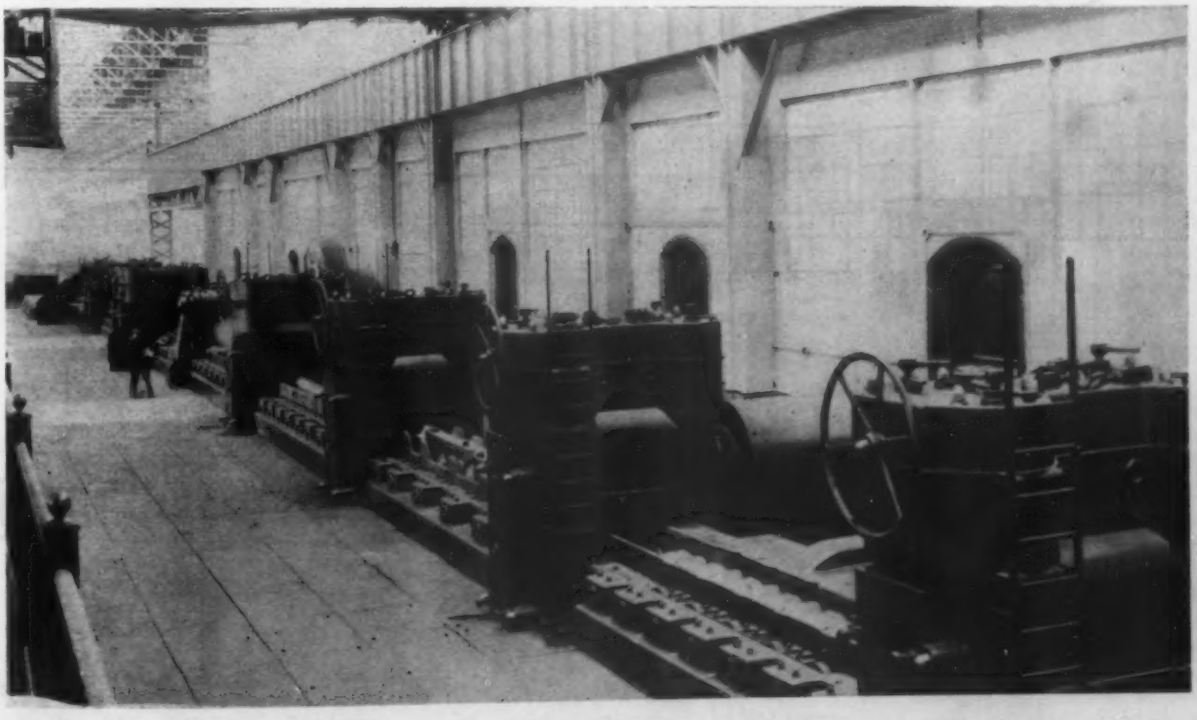
Back View of the Tilter Above the Soaking Pits, Showing Its Operating Mechanism. After the crane places the ingot in the tilting cradle, in a vertical position, the latter is tilted backward and the ingot slides down the chute

are sent down the chutes from all the furnaces, so that no regulation of the ingot flow will be necessary.

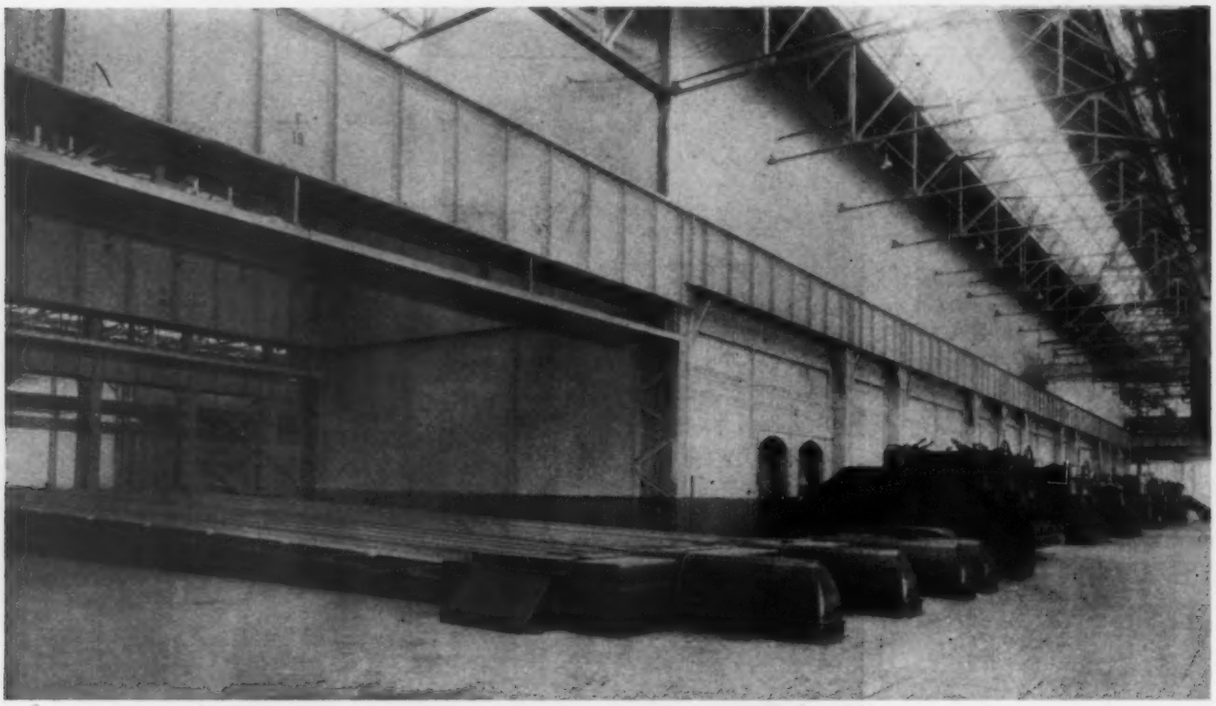
As stated above, the ingot run makes a 90-deg. turn just beyond the last soaking pit—the one nearest the mill—its direction through the mill being in a line parallel with the open-hearth furnaces. The distance from the nearest soaking pit to No. 1 stand of the 42-in. mill is approximately 175 ft. At the 90-deg. turn in the table provision is made for the discharge of cold or defective ingots. There is a break in the drive at this point and, by reversing the drive of the portion of the table beyond the turn, the ingot that has passed the turn in the table is sent straight backward to a point where the pit crane can pick it up for recharging. By means of skew rolls the ingot to be discarded is carried over the outer side of the table in the backward movement, while the ingots that are to go forward are kept on the inner side of the table.

Automatic Manipulation of Bloom

The rollers of the mill tables between the eight stands are shaped to effect the mechanical manipulation of the ingot and bloom between the stands, where necessary. This is one of the outstanding features of



Blooming and Billet Mill Which Has a Capacity of 100,000 Tons of Billets and Sheet Bars per Month. It is a semi-continuous mill with four 42-in. and four 32-in. stands. The rolls of the mill tables between stands are shaped to effect mechanical manipulation of the ingot and bloom between stands, when necessary



Leaving the 32-In. Mill, the Billets Pass to a Broadside Transfer Table (Left Foreground) Which Discharges Them to a Collecting Table, From Which They Are Delivered to a Shear for Cutting to Length

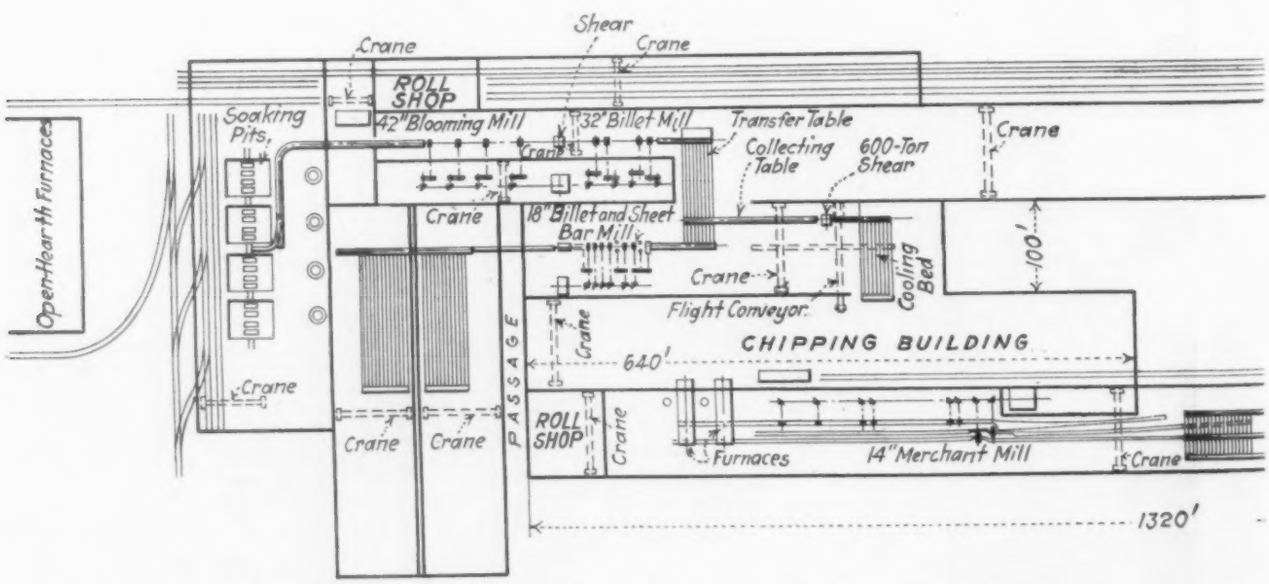
the mill. The 42-in. stands are on 25-ft. centers. All rollers in the approach table to the first 42-in. stand are hour-glass shaped to carry the ingot into the first pass. It comes out of this pass in the shape of an oval. It is not turned between the first and second stand, but is turned over once between the second and third stands and not between the third and fourth stands. The rolls of the first two stands have one pass and those of stands three and four have two passes. A reduction of approximately 25 per cent is made through each pass.

Leaving the last 42-in. stand, the bloom passes through a No. 5 up-and-down shear which cuts off the crop ends. These pass through a chute and onto a conveyor which dumps them into a car in the adjoining bay.

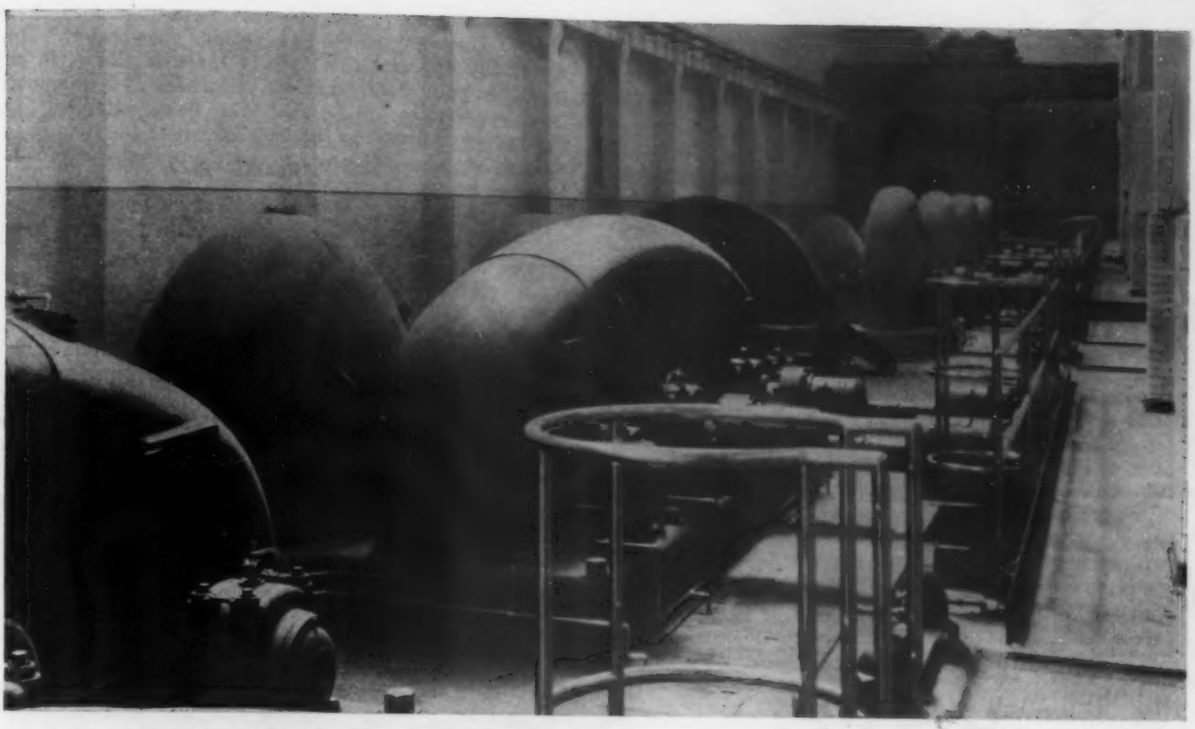
From the shear the bloom passes to the approach table to the 32-in. mill, which has table manipulators which turn the piece 90 deg. and direct it into the first set of rolls. Stands 1 and 2, and 3 and 4 are on 10-ft. centers. There are no tables between stands 1 and 2 and between 3 and 4, twist guides being used between these stands for turning the work. Stands 2 and 3 are separated 25 ft. and the work is turned on the table between them by the table rolls. The rolls of Nos. 1 and 2 stands have three passes. Those of No. 3 and the finishing stand No. 4 have two passes of the same dimensions on the outer side for 3⅞-in. x 3⅞-in. billets, a center pass for 8-in. x 2-in. slabs and an inner pass for 5½-in. x 5½-in. billets.

Notable Use of Nickel Steel

The 3½ per cent nickel steel posts that take the place of the usual mill housings are 11-in. x 18-in. in

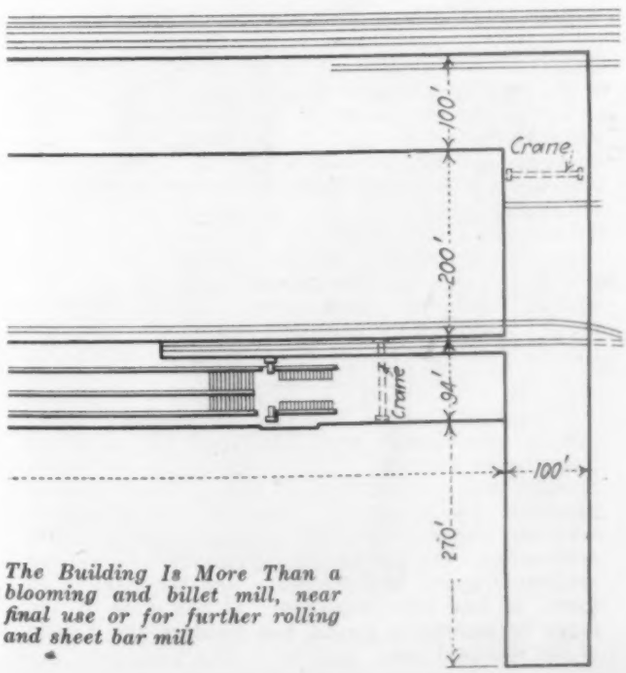


Impressive Size Is Only One of the Characteristics of the New Ford Blooming Mill—Quarter Mile Long and the Transept (at Right) an Eighth Mile. The continuous upper left of illustration, carries steel in a straight line until it is prepared, either for down in the 18-in. billet



This Indicates the Attractive Appearance of the Motor Room, Which Is Finished in White. The motor and gear housings are enameled. The eight mill stands are driven by one motor through a long line shaft

size and 14 ft. long in the 42-in. mill. The post extends 4 ft. into a semi-steel base and a 10-in. nut is shrunk on the bottom of the post. The bearings are set between the posts, which are slotted for the guide equipment and for the in-and-out adjustment of the bearings. A heavy cast steel cover covers the ends of the rolls and bearings on the working side, as well as acting as a support for the end thrust screws for the roll bearings. The cap is of cast steel. This contains the mechanism for locking the cap into the post. By turning a hand wheel the four locking nuts are turned simultaneously. The threads on the posts and nuts are similar to artillery breech block grooving, so that, with a turn of 60 deg., all threads are engaged firmly, locking the cap to the posts. With this locking arrangement the cap can be removed quickly when the rolls are to be changed.



The Building Is More Than a blooming and billet mill, near final use or for further rolling and sheet bar mill

Adjustments of the rolls are made by an electric drive located in the basement under the mill, and with controls on the working floor. There is an independent roll adjusting drive for each side of the mill.

When leaving the last finishing stand of the 32-in. mill, the 3⅞-in. square billet made from a 1500-lb. ingot has an approximate length of 30 ft. From the finishing stand the billet passes to a stop on the runout table and is delivered to a broadside transfer table 90 ft. long and 30 ft. wide, on which it is moved by four sets of chain-operated dogs. The transfer discharges the billet to a collecting table approximately 150 ft. long, in which is a disappearing stop. On this table up to six 3⅞-in. square billets are collected. Then the stop is let down and the billets pass along the table to a 600-ton electrically-driven billet shear. This shear can cut up to six 3⅞-in. square hot billets at one time.

Connected to the shear is a traveling overhead gage which has three stops that are raised or lowered to stop the billet or allow it to pass. One stop is for measuring the billet in the shear and the other two stops are for stopping it at the proper place for delivery to the cooling bed. The back shear table is connected to the upper block of the shear and travels up and down with it. The back shear table also has a receding motion to allow butt ends up to 4 ft. in length to pass through to the basement, from where a flight conveyor carries them through the basement into the adjoining chipping bay, on the other side of which is the 14-in. mill building.

Billets are cut up into 15-ft. lengths for the reheating furnace used with the 14-in. mill (described in THE IRON AGE of Jan. 21 last, page 197). After shearing they pass to the cooling bed 90 ft. long and 32 ft. wide. This is a standard type bed with straight edges and "go-devils." The billets are discharged from the cooling bed to bins on scales, from where two overhead cranes carry them to the adjoining chipping bay.

An 18-in. continuous sheet bar and billet mill is near completion in the bay adjoining the blooming and billet mill. Billets and slabs from the larger mill will pass over the broadside transfer, but, instead of being run onto the collecting table, will move over the re-

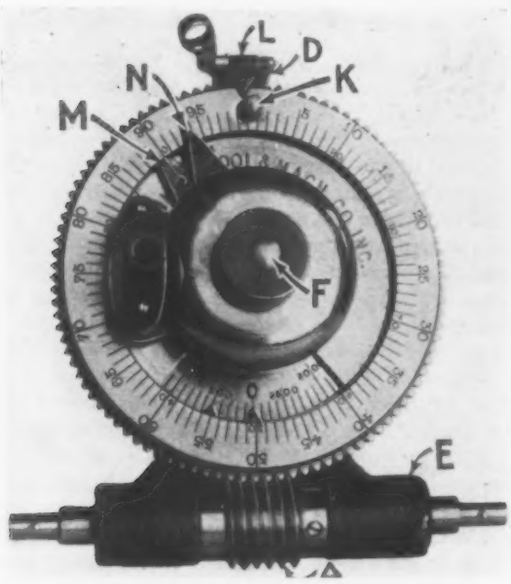
(*Concluded on page* 1671)

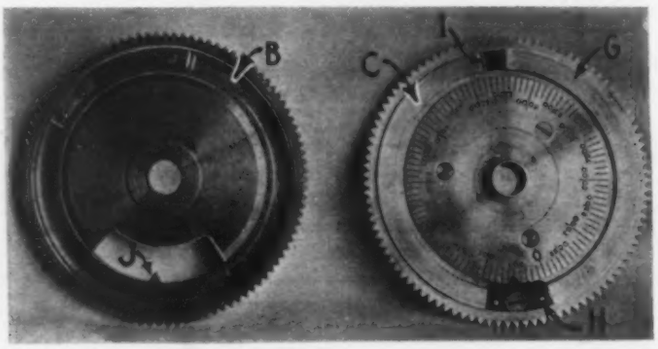
Stop Counter for Coil Winding and Other Machines

Simplicity of design and ruggedness of parts are features of a revolution stop counter brought out recently by the Viking Tool & Machine Co., Inc., 745 Sixty-fifth Street, Brooklyn, N. Y. The device is adapated for use on various types of coil winding machines, where coiling of the wire to a predetermined number of turns is desirable; lineal measuring machines; textile machinery; power presses; screw machines; mixers and other production equipment.

The device can be mounted on the frame of the machine and connected to the main drive shaft or other revolving part. With the output of the machine known in terms of revolutions of the main shaft or other part to which the counter is connected, the counter may be set to ring a bell, and thus warn the operator, or to stop the machine after a predetermined number of turns or quantity has been produced.

Four styles of the device are available, one of which, the electrical type, is illustrated herewith. With this arrangement, a bell is rung just before the machine is stopped, the stopping being accomplished automatically by means of engagement of an electric switch.





The Counter May Be Set to Ring a Bell When the Coil Winding or Other Machines Have Produced the Predetermined Quantity. Another type of the device stops the machine automatically by means of an electric switch. The illustration above shows the rear of the front wheel and the front of the second or back wheel

A second type is equipped with a mechanically-operated lever which is arranged to actuate a clutch and thus stop the machine. In the third type of counter, the ringing of a bell serves as a warning to the operator that the machine has completed the production desired. The fourth type is a high speed plain counter, from the dial of which may be read the number of revolutions or strokes of the machine. This type counts up to 9900, but by stepping-up the gearing it can be arranged to count up to 99,000.

At the completion of the predetermined production from the machine the dials of the counter may be set quickly to the zero position for the next run of the machine. Resetting of these dials is facilitated by a lever at the rear, which raises the two dials and worm wheels from engagement with the worm.

The counter is made up of steel worm *A*, the bronze outer dial and worm-wheel *B;* the bronze inner dial and worm-wheel *C;* the worm and worm-wheel engaging lever *D;* and the bracket, *E*. The wheels *B* and *C* are mounted adjacent to each other and revolve on a stud, *F*, upon the outer end of which the warning bell and make-and-break electrical device are also mounted.

The wheel *B* (mounted in front of *C*) has 100 teeth, and wheel *C*, 99 teeth, so that with each 100 revolutions of worm *A*, wheel *C* gains one tooth on wheel *B*. A groove is machined around the front side of wheel *C*, and in this groove ring *G*, may be adjusted to carry pointer *H*, to any of the graduations on wheel *C*. Diametrically opposite this pointer there is slot *I*, in the ring. A pointer, *J*, provided on wheel *B* is diametrically opposite to pin *K*, the latter being attached to a flat spring fastened to the back of wheel *B*. The graduations of wheel *C* are for even hundreds of revolutions of worm *A*, while the front of the wheel *B* is graduated to record any number of revolutions of the worm up to 100. The opening in dial *B* permits observation of a portion of the graduations on wheel *C*.

To set up the device for stopping the machine after a certain number of revolutions of the main drive shaft or other moving part, wheel *C* and ring *G* are adjusted relative to each other to place pointer *H* in line with the graduation equivalent to the predetermined number of revolutions of the main shaft or other moving part. The screw of pointer *H* is then tightened to lock the adjusting ring to the wheel. Both wheels are then assembled on the device with the zero graduation on the front of wheel *B* in line with the stationary pointer *L*, which is attached to the engaging lever *D* and with the zero graduation of wheel *C* coinciding with pointer *J*. Pointer *M* of the electrical unit is then positioned, by swiveling the electrical unit.

With worm *A* being driven by the machine on which the counter is used. wheels *B* and *C* revolve counterclockwise, wheel *C* creeping up on wheel *B* a distance of one tooth for every 100 revolutions. At the moment of coincidence of pointers *H* and *J*, the edge of the spring on the back of wheel *B* snaps into the slot and draws the pin *K* into a hole in wheel B. Prior to this time, a slot in pin *K* has permitted the pin to clear the bell ringing levers *N*, but now the slotted portion of the pin has been withdrawn into the wheel and as the pin is carried around with the wheels, it strikes levers *N* to ring the bell. As the graduation of wheel *B* coincides with *M*, an electric circuit is then closed to operate a brake and to stop the drive of the machine. Application has been made for patents covering the device.

"The Load Test for Fire Clay Refractories" is the title of technological paper No. 2 of the American Refractories Institute. The author is M. C. Booze, formerly senior fellow of the institute. It is a 12-page pamphlet, well illustrated. After discussing general conditions and the effect of firing temperature upon deformation, the author takes up the relation of spalling, slagging and shrinkage and the relation of fusion to load test properties. At the close of the paper he presents a special test to show the fallacy of the standard test.

Linear Dividing Machines for Hand and Automatic Operation

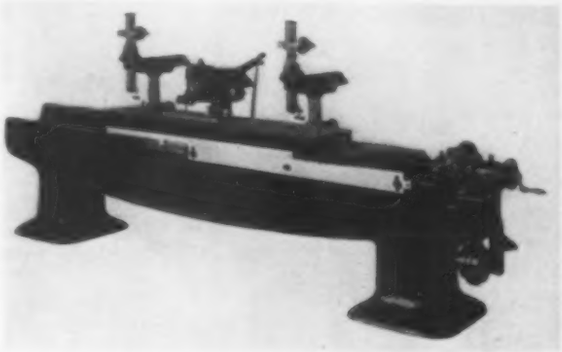
Two new models of the precision linear dividing machine of the Société Genevoise d'Instruments de Physique, Geneva, Switzerland, have been placed on the American market by the R. Y. Ferner Co., Investment Building, Washington. One machine, designated as the No. 0015, is for hand-operation, and the other, the No. 0016, is fully automatic, being driven by a ¼-hp. motor. Both machines are intended for use in graduating linear scales up to 20 in. in length, and can be used to make rulings on metal, wood, celluloid or glass.

The beds of the machines are heat treated and the ways are chill cast, and carefully scraped. Special attention is given to making the ways straight, the sum of the two maximum errors of the straightness of the ways, both vertically and horizontally, being said not to exceed 0.008 mm. The lead screw is also given special treatment to increase hardness and reduce wear. The thread of the lead screw has a profile angle of 30 deg. which offers a large bearing surface, tending to decrease the wear. The accuracy of the screw, without the compensating device, is between 0.010 and 0.015 mm. which is reduced to plus or minus 0.005 mm. by the use of a compensating templet. The total periodic errors of the screw are claimed to be less than plus or minus 0.002 mm.

In the new model the pattern of the bed has been entirely changed and the micrometer head placed at the right-hand end of the machine. A new type of tracing tool, of simpler and more substantial construction, has also been provided. This new tracing tool permits of ruling from 10 to 30 lines per min., the former rate being 6 to 20, on the automatic machine. The maximum height of the engraving tool above the table of the machine has been increased from 2 to 3 in., and lighter lines, as well as heavy, may now be ruled, the various widths with a steel cutting tool being from 0.002 to 0.006 in. The maximum length of lines that may be ruled with the machine is 1 in. A diamond graving tool can be furnished for ruling lines as fine as 0.0001 in. in width.

With the new tracing tool have been provided tracelet disks having 8, 10, 12 and 16 notches, which permit graduation of scales with variation in length of lines, on either the binary, decimal or duodecimal systems. The pitch of the lead screw is 1/20 in., or 1 mm. in a metric machine, and ratchet wheels having 200 and 160 teeth are provided so that it is possible to rule as many as 4000 lines per in.

The two micrometer microscopes furnished with the machine are mounted on adjustable supports which

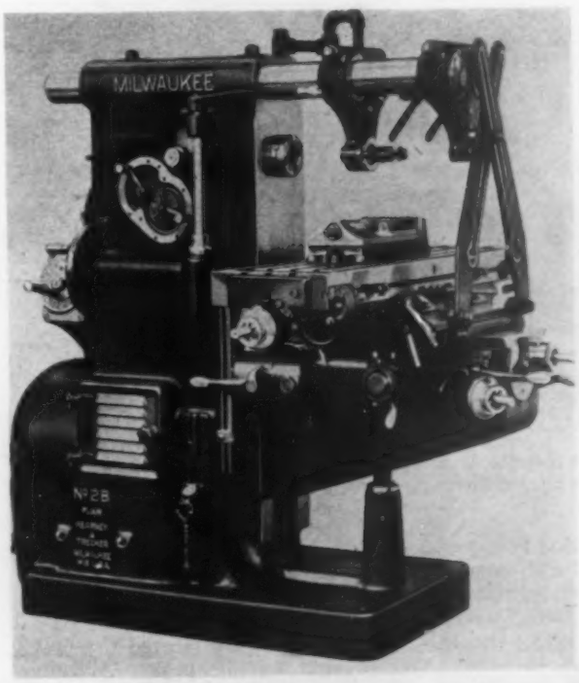


Precision Linear Dividing Machine for Graduating Scales Up to 20 In. in Length

can be placed at any point of the bed. These serve for checking work that has been done on the machine, against the screw of the machine, or by comparison with another standard scale. They are used also where the work is longer than the capacity of the machine and it is necessary to reset the work after it has been partly graduated.

New No. 2 Milwaukee Milling Machine

A new No. 2 milling machine incorporating the features of its larger No. 3 and No. 4 machines, described in THE IRON AGE of Aug. 19 and May 20, respectively, has been added to the line of the Kearney & Trecker Corporation, Milwaukee.



Motor-in-Base or Belt Drive Is Optional. Roller Bearings, all-geared drive and other features of the larger machines have been incorporated

The machine is available in the manufacturing, plain and universal types. Motor-in-base or belt drive is optional, the same column being used in either case and the price being the same. All-geared drive from the motor pinion or the belt pulley is a feature. The main drive shaft, idler shaft, friction clutch shaft and speed change shafts are mounted in Timken roller bearings. This machine has power rapid traverse in three directions on all except the manufacturing type, which has power feed and rapid traverse in the table.

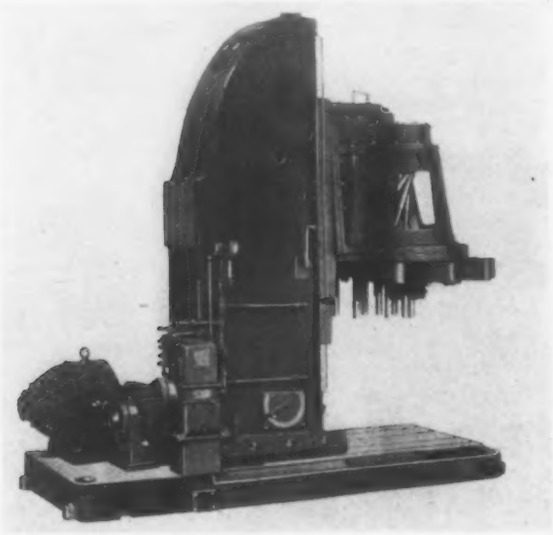
The use of self-oiling universal joints on all feed and power rapid traverse shafts is also a feature as in the larger machines and duplicate front and rear control levers are also provided. Lubrication is centralized. Automatic flooded lubrication is provided for gears in the column and feed box, and splash lubrication for rapidly moving parts in the knee. Wick oiling is employed for the table and saddle bearings. Other features include the automatic low-pressure coolant system with cut-out and the improved distribution system. The accessibility and convenience of removal of the lubrication and cutter coolant pumps, which featured the larger machines, are included also in the No. 2 miller. Enlarged coolant channels have been incorporated, and six oil pockets are provided in the table for returning the coolant to the reservoir.

Detachable head socket wrenches of chrome-vanadium steel are being placed on the market by the Bonney Forge & Tool Works, Allentown, Pa. The sockets are forged from bar stock and the unusual strength of the material permits of thin wall sections, which is an advantage in close corner work. A complete assortment of handles of forged chrome-vanadium steel is also available. The standard ½-in. square lug is employed, which permits of using the new tools in connection with any detachable head socket wrenches. Adapters are provided so that the chrome-vanadium handles may be used for the large size sockets.

Compactness Features New Heavy-Duty Multiple Drill

The Fox Machine Co., Jackson, Mich., is placing on the market a heavy-duty multiple-spindle drilling machine designated as the No. 33 H-C, primary claims for which are compactness and rigidity. Oilgear hydraulic feed to the drilling head is a feature.

Power is transmitted through a gear box in the column base, the gear box being a unit assembly which may be removed conveniently if necessary. The gears



Heavy-Duty Multiple-Spindle Drilling Machine With Oilgear Hydraulic Feed to the Head

in this unit are of alloy steel, heat treated, and are mounted on ball-bearing shafts forming a sliding gear transmission for the selection of one of the three speeds for the drill spindles.

From the gear box the drive is through a set of spiral bevel gears, at the front end of the box, to a vertical double-splined shaft which has no longitudinal movement. This shaft is located in a recess in the face of the column and supported by a bearing at the upper end of the column. The drilling head is moved up and down on the column ways by means of a gear arrangement, the gear being provided with keys which engage with the splines in the vertical shaft. The drive from the shaft to the drive pinions of the drill spindles is through ball-bearing idler gears.

Accessibility of the hydraulic feed cylinder is another feature emphasized. This cylinder is located in the column recess directly behind the vertical drive shaft. The standard column accomodates a feed cylinder having 12 in. stroke, but provision is made for the mounting of an 18-in. stroke cylinder if desired. The pipes which supply oil to the cylinder are inserted through the side of the column.

The feed cylinder ram, of special construction, has square threads for a length of 24 in., this threaded portion engaging with a nut which is held against rotation by the head saddle. The upper end of this ram telescopes in a sleeve suspended from the column top cover. The ram and the sleeve are keyed together and the sleeve is arranged so that it will rotate when the operator turns a crank on the left side of the column.

The Oilgear pump employed is driven by silent chain from the drive shaft at the rear. It permits of rapid head travel in either direction and a drilling feed that can be adjusted to any desired rate. Adjustable stops are provided on the right-hand side of the column so that the amount of rapid head movement and depth of drilling feed may be regulated. Fine adjustment for the drilling depth facilitates the drilling of blind holes. Manual control for this hydraulic feed is located conveniently at the right-hand front of the drilling head. By moving this control to secure rapid travel down, the operator has completed his part in executing the drilling cycle, but at any time during the cycle this control may be used to stop or reverse the head feed. The control handle is also arranged so that it may be locked in its neutral position to prevent accidents when adjusting spindles, drills or the work.

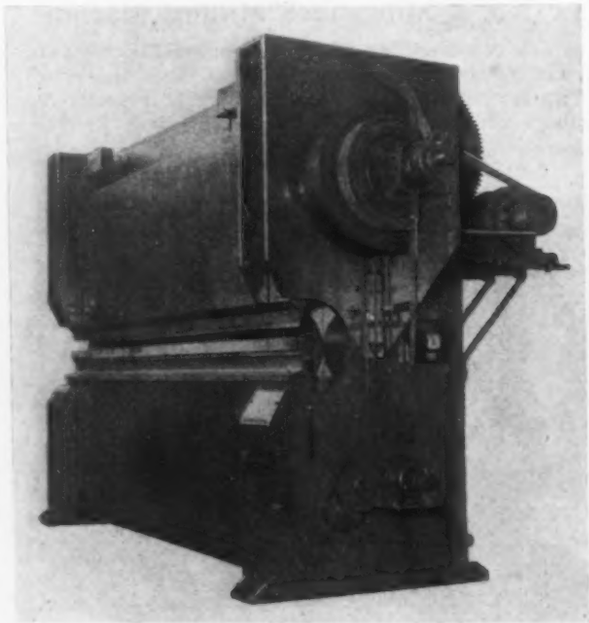
The gears in the gear box in the base of the column run in an oil bath. The head is furnished with its own oil reservoir and pump within the head, providing a continuous lubrication throughout the drilling head. The drilling spindles can be furnished with individual speed controls, including a neutral position, but for drilling at high speed, the single spindle speed is recommended because of the more rigid construction. Drilling heads of a wide variety of sizes, either round or rectangular, can be furnished, and spindles of various sizes are available.

Gap Housing Toggle Type Brake

Incorporation of a toggle motion, intended to increase the pressure at the bottom of the stroke where the final bend is made, is a feature of a new double-housing gap press brake which is being added to the line of the Dreis & Krump Mfg. Co., 7430 Loomis Street, Chicago. The machine is designed for heavy bending or making multiple bends in one stroke and is built in various lengths up to 14 ft., with capacity for bending up to ½-in. plate.

A direct motor-to-flywheel drive is employed. This drive consists of Allis-Chalmers Texrope endless vee-belts with grooved cast-iron sheaves, one sheave being on the clutch rim on the flywheel and the other on the motor, as shown. The flywheel operates on Timken roller bearings. A bronze ring is mounted on an eccentric which is shouldered into the bull gears. This eccentric actuates steel connection straps which drive against the toggles and operate the ram, the toggles being bronze lined. The toggles are arranged so that they do not straighten completely when the ram is down, which eliminates the possibility of the ram becoming jammed on dead center when too close adjustment is made.

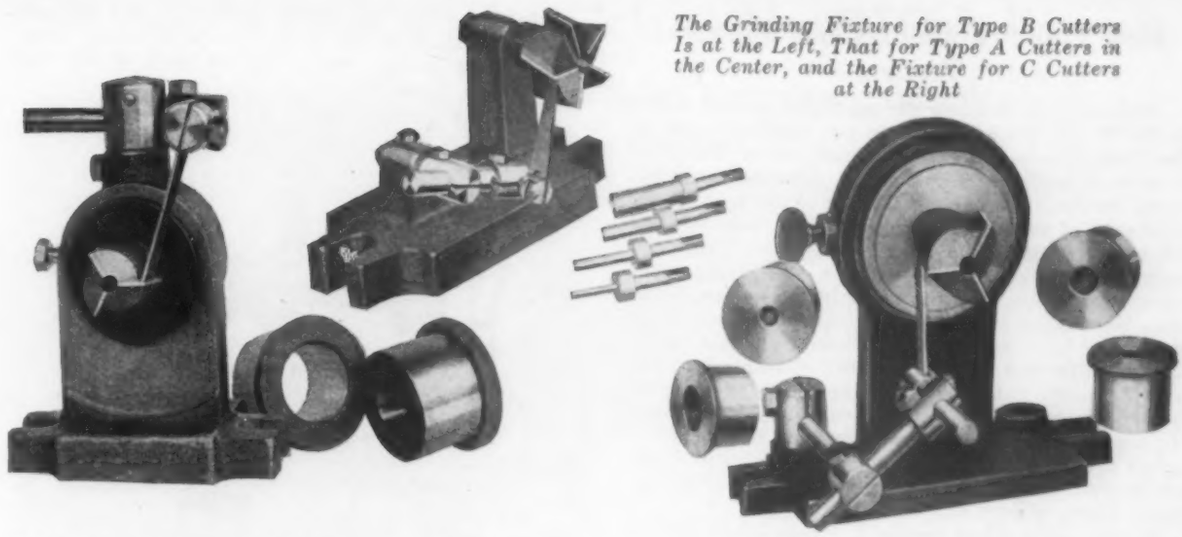
The ram slides in heavy steel guides lined with phosphor bronze. Adjustment for height of dies and



The Toggle Motion Increases the Pressure at the Bottom of the Stroke. Housings are of double plate and channel construction

thickness of metal is through a small reversible motor and a series of gears and this adjustment may be made independently at each end or in unison, as required.

Each housing is made up of two steel plates spaced by heavy channels, between which are located the bull gear, eccentric, toggles and driving gears. Within each housing is an independent driving unit, the two units being connected by a drive shaft on which the flywheel and clutch are mounted. Bearings and slides are lubricated by a Madison Kipp forced-feed oiler.



The Grinding Fixture for Type B Cutters Is at the Left, That for Type A Cutters in the Center, and the Fixture for C Cutters at the Right

Grinding Fixtures for Counterbore and Core Drill Cutters

Three grinding fixtures designed to facilitate the grinding of its types A, B and C counterbore and core drill cutters are being marketed by the Gairing Tool Co., Detroit. The construction of these fixtures may be noted from the accompanying illustrations, the fixture for the types B, A and C cutters being shown successively from left to right. The cutters are inserted in bushings, or on arbors as in the case of type A cutters, and are kept from turning while being ground by means of the flat piece or finger extending from the adjustable member on the base or at the top of the fixture, as shown. Lugs are provided at the ends to permit of bolting the fixture to the table of the grinding machine.

In connection with the use of the fixtures the company offers the following suggestions: For maximum efficiency in counterboring, the tool must have the proper chip clearance so that the chips will not clog; 29 deg. is recommended. It is also important to have proper clearance or backing off of the cutting edges; 7 deg. will give good results. For counterboring in brass, change the angle of 15 deg. spiral to straight by grinding the face of the flute.

For sharpening or salvaging the company's core drills the four cutting edges must be of the same length, inclining to the axis of the cutter; for ordinary use 30 deg. included angle is recommended.

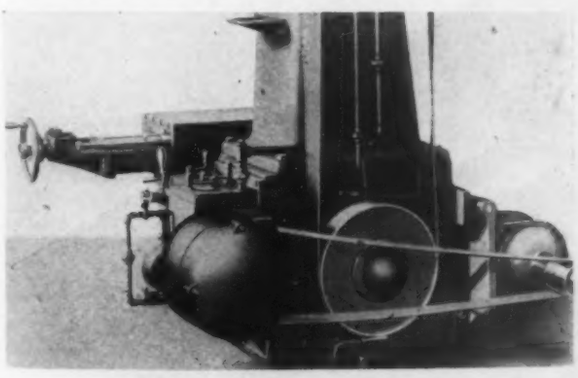
Failure to relieve the heel of the counterbore when sharpening the cutting edges will cause chips to gather in the web of the flute. It will often cause the cutting edges to chip and throw undue strain on the drive shank of the cutter. In sharpening counterbores and drills it is important to keep the flutes the same length.

Modifies Its Jig Borer

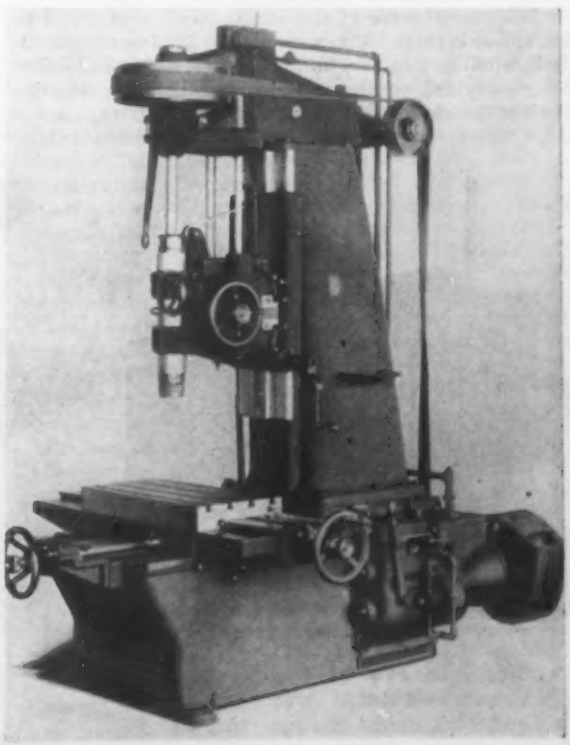
To the Pratt & Whitney jig borer of the Pratt & Whitney Co., Hartford, Conn., which has been on the market for some time, some improvements have been added. The fundamental design still has the boring spindle in a vertical position and the table positioned by end measures.

The large pulley on the spindle has been widened, and the idler pulleys are now made adjustable so that the tension in the spindle belt can be regulated easily and quickly at any time. The idler pulleys are fastened to the rear of the column head by bolts passing through slots, so that the pulleys may be adjusted up or down as necessary. It is because of this adjustment that the pulley on the spindle has been widened.

The motor, formerly mounted on a bracket at the rear left hand side of the bed, is now hung on a swinging platform in approximately the same position. Belt tension is adjusted by means of a screw on the swinging motor platform. The main drive of the machine, formerly through a pair of tight and loose pulleys, is now obtained through a friction clutch pulley, thus not requiring belt shifting and the long motor pulley. A cast iron guard incloses the friction clutch.



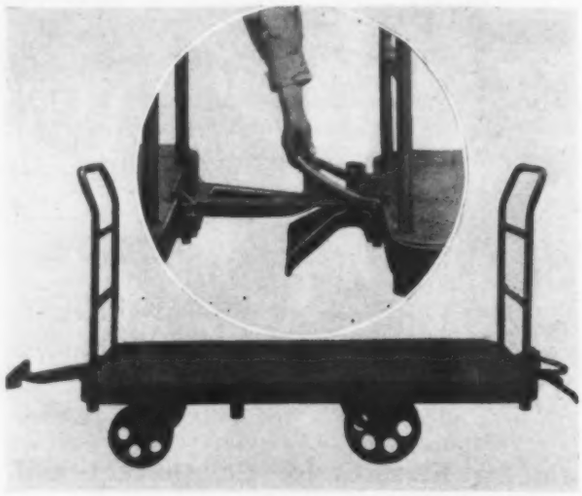
Improvements Include Wider Spindle Pulley and Idler Pulleys Arranged So That Tension of Spindle Belt May Be Regulated Quickly. The new arrangement of the driving motor may be noted from view above



New Trailer Couplings and Improved Trailers

An automatic coupling for industrial trailers, known as the "Clark hitch," has been put on the market by the Clark Tructractor Co., Buchanan, Mich. The hitch is made of malleable iron castings, designed for rough, heavy service. A coupling is effected by pushing the male part of the hitch, a hinged pointed member, into the socket of the female section. As the male point enters the socket, it slips under a steel loop, which automatically drops over a notch in the pointed member. Uncoupling is effected by lifting the loop either by hand or by rope or chain. The female socket serves as a pivot for the radial movement of the male member. An apron extending from the socket provides an upward pressure of the notched point against the loop. The apron flares out as it extends from the socket to permit the male part of the coupling to swing through a wide arc. The hitch members may be clamped to any trailer frame without any drilling.

A new caster-wheel trailer has been developed by the same company. The front wheels are of the caster type, 10 in. in diameter with a crown face, 3 in. wide. They are swivelled to a ⅝-in. steel plate, which is riveted to the frame of the trailer. The wheels are of cast steel and have heavy duty roller bearings in the hubs. The casters are equipped with large heavy duty thrust bearings. The rear wheels, which are mounted on an axle, are also of cast steel, 12 in. in diameter, with a 3½-in. crown face. The trailer is designed to turn within a very small radius and to permit straight trailing when a number of trailers are coupled together. The frame is of iron, and the platform, set flush with the frame, is of hard wood. Eight steel sockets in the frame, two on each of the four sides of the platform, have been provided for inserting racks or rails to hold the freight. The carrying capacity of the trailer is 4000 lb.



In the Trailer the Front Wheels Are on Casters That Permit Turning Within a Very Small Radius. The "hitch" (shown in circle) couples automatically. It is uncoupled by lifting a steel loop

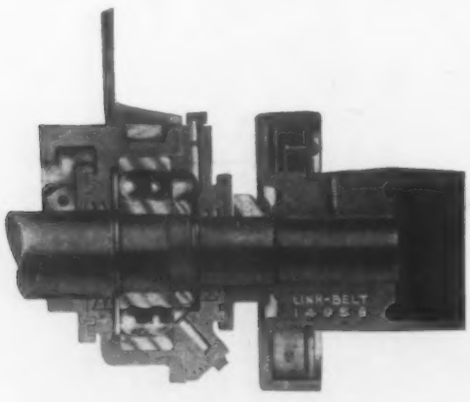
Ball-Bearing Vibrating Screen

A mechanically-operated vibrating screen incorporating only one moving part, which rotates in oversize ball bearings, has been placed on the market by the Link-Belt Co., 910 South Michigan Avenue, Chicago. Five standard sizes, ranging from 2 x 5 ft. to 4 x 8 ft., are available. Each size can be furnished with either one or two screening surfaces, adapting the machine for materials of varying size and capacities.

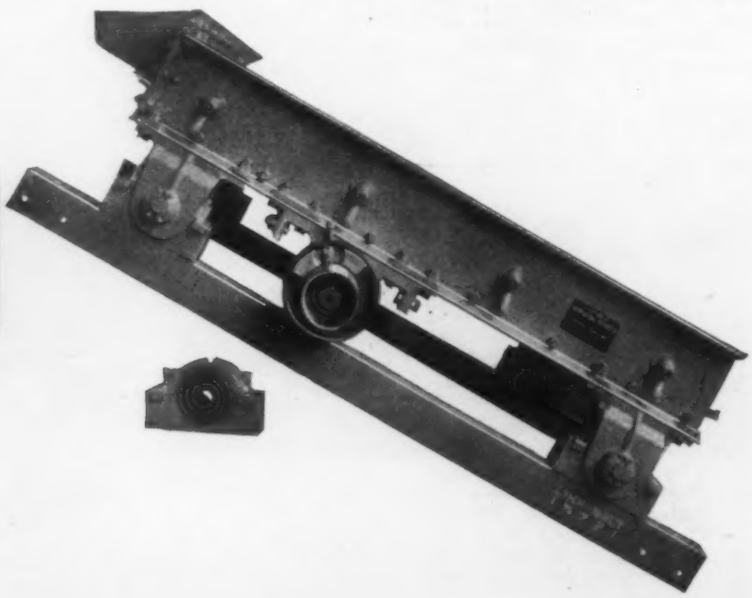
The vibrator consists of a shaft, driven at suitable speed from any common source of power. This shaft, thrown out of balance by adjustable counterweights, imparts vibrations to the screen box on which it is mounted, and these, in turn, are transmitted to the screen cloth secured, under tension, in the box.

The four corners of the screen box are mounted on flat spiral springs. The screen cloth is placed upon the deck with its two longitudinal edges bent up, binders being provided on the fine mesh cloths for protection against tearing. Two flanged clamp plates engage these binders or the bent edges of the cloth, and by tightening the wing nuts on each side, the cloth may be conveniently stretched to the desired tension. These side clamp plates serve the four-fold purpose of stretching the screen cloth, clamping the cloth to its deck, eliminating wear of screen box side frames, and preventing leakage along side edges. A longitudinal vibrator strip is provided to assist the screening action by imparting raps to the cloth, which is claimed to minimize wear and blinding. The binders may be detached quickly, and screen cloths are of standard width.

A feed hopper attached to the receiving end of screen box vibrates with it and controls the feed so that the material is spread uniformly over the screening surface. For screening materials containing small particles, the vibrating feed hopper is fitted with a counterweighted swinging feed gate. This combination is stressed as making it easy to receive a non-uniform feed, and spreading the material over the width of screen cloth at the proper speed. It is also credited with adding about 2 ft. to the effective length of the screen, and obviating the use of mechanical distributers.



Cross-Section Showing Assembly of Vibrator Pulley (Above)



Side View Showing Feed Hopper, Counterweighted Vibrator Pulley and Flat Spiral Springs (Right)

Transforming Coal Into Oil

Hydrogen Used in Process for Extracting Gasoline and Other Oils from Low-Grade Coal—Yield in Oil Is Half the Coal Weight

DIRECT liquefaction of coal by hydrogenation was described before the recent International Coal Conference at Pittsburgh by Dr. Friedrich Bergius, Heidelberg, Germany. He expressed himself as believing firmly that coal or a similar carbonaceous substance is the only raw material which can be used in an industrial process to manufacture artificial substitutes for oil. He told of the development, to a point of commercial practicability, of the extraction of gasoline and lubricating and fuel oils from low-grade coal and from fine coal and screenings.

While most of his paper was devoted to the technique of his own process, he spoke of others. Some of these processes of low-volatile distillation are practicable in yielding coke and low-temperature tar. The oil which they produce, however, is merely a by-product and in small quantity.

Hydrogen in a Double Reaction

Uncertainty was expressed as to the economy of manufacture of motor fuel by synthetic derivation from coal products. Coal in this process is transformed into coke, from which carbon monoxide is derived. This is made to react with hydrogen. In the transformation of coke to carbon monoxide, hydrogen is separated from the carbon and replaced by oxygen. Later on in the process this reaction is reversed. It is found that an excess of elementary hydrogen must be added for combination with the oxygen, if the latter is to be separated from the carbon.

As the expense of generating free hydrogen is considerable, it becomes particularly desirable to conserve the original hydrogen content of the coal. This is done by the Bergin process, in which the author is interested.

How the Bergin Process Operates

Coal for the Bergin process is ground to pass a 12-mesh sieve or finer and is then mixed with the heavy portion of the oil derived from the process. The resulting pasty material is forced into a pressure vessel, where it is heated, together with oil already in the vessel, to the temperature of reaction. For best results a pressure approximating 3000 lb. per sq. in. is required. Hydrogen is introduced with the coal and oil. When the products are withdrawn, the gas is separated from the liquid and the solid material. This takes place after all the material has been cooled and the pressure reduced.

About half the weight of the coal charge appears in the oil produced by this process. That is to say, one net ton of coal will yield 132 gal. of oil. By a somewhat different treatment a ton of bituminous coal will produce about 45 gal. of gasoline. It is said that this fuel has non-knocking qualities similar to those of a mixture of gasoline and benzol. Good lubricants are reported derivable from the oil produced by this process.

Construction has been begun in Germany on two plants based on this process. Their joint capacity will be about 1,000,000 bbl. per year of oil products.

MANGANESE INTERESTS UNITE

Indian Ore and Four British Producers Combine to Market Products

Negotiations have evidently been concluded between the Indian manganese ore producers and the British makers of ferromanganese so that a fusion of British Empire interests will be the result. According to the London *Iron and Coal Trades Review*, at a meeting of the Bengal-Nagpur Railway, which has greatly assisted in the development of the Indian manganese ore industry, Robert Miller, the chairman, alluded to a movement for merging some of the principal English ferromanganese makers. It is stated that the directors of the Central Provinces Manganese Ore Co., Ltd., have completed negotiations with four of the principal makers of ferromanganese in the United Kingdom for the supply of manganese ore and for the manufacture and sale of ferromanganese.

A company to be called the United Kingdom Ferromanganese Co., Ltd., has been registered with a capital of £350,000, divided into 50,000 common shares of £1 each and 300,000 6 per cent preferred shares of £1 each. The merger takes the form of a British Empire concern rather than an Anglo-Indian one because, although the Colonial steel making and manganese ore interests are not actually included in the combination, the new company will guarantee supplies to them in addition to guaranteeing the supply of ferromanganese to British steel works. The combination will act as a marketing and financing company only, the actual buying and selling being done by the constituents as hitherto.

There will be four directors of the new company, two being nominated by the Central Provinces Manganese Ore Co., M. Wilkinson and H. R. Holmes, chairman and managing director respectively of the company, and two by the ferromanganese makers, Edgar Beck and Col. W. Tomlinson. The company will supply manganese ore to the new undertaking at an agreed price and the ferromanganese makers will buy all the ore required from the latter. In turn the new company will buy from the ferromanganese makers the whole of their production of the alloy at a price which has been arranged and market it for the benefit of the ferromanganese makers and the Central Provinces Manganese Ore Co.

The four British makers interested in the new combination are Dorman, Long & Co., Ltd., (Carlton Iron Branch); the Darwin & Mostyn Iron Co., Ltd., the Wigan Coal & Iron Co., Ltd., and the United Steel Cos., Ltd. The two firms making ferromanganese, outside the combination, are the Linthorpe Dinsdale Smelting Co., Ltd., and Bolckow, Vaughan & Co., Ltd.

Regarding the general situation in England as to the supplies of ferromanganese, it is stated that the position is likely to remain stringent for some time. It is not expected that the coke plants will be turning out much coke until well into the first part of December and consequently there is not likely to be much ferromanganese produced in the blast furnaces before Christmas. Meanwhile prices are firmly maintained at the recent advance to £15 for both the home and export trade and there is every probability of a further upward movement almost immediately. Considerable export business is being refused at the present time, so that the small quantities available may be reserved for British trade. Manganese ore, also, is scarce and much higher, the present price being about 1s. 8½d. per unit, c.i.f. United Kingdom ports, for 48 to 50 per cent Indian ore.

It has been estimated by the United States Geological Survey that the original coal resources of the United States were 3444 billion tons. Of this amount 16 billions have been used and 8 or 9 billions wasted, leaving a present reserve of 3419 billion tons.

TRADE COMMISSION CURBED

Decision of United States Supreme Court Regarded as Limiting Its Authority

WASHINGTON, Dec. 7.—Recent decisions of the United States Supreme Court have limited the authority and power of the Federal Trade Commission, according to some legal minds who have been studying these opinions. These lawyers contend that, while the Supreme Court could not strip the commission of authority, its rulings have made clear that powers vested in the commission by Congress are much more limited than generally imagined.

There are some who contend that the powers of the commission are now limited to matters affecting false and misleading branding of goods. A few take the extreme view that the statutory powers of the commission are so narrowed as to make unnecessary the existence of the commission itself. However, the budget message of the President presented to Congress yesterday provides for $984,350 for the fiscal year of 1928 as against $997,000 for the fiscal year of 1927.

Unfair Methods Defined

The decisions of the Supreme Court have defined unfair methods of competition as meaning what was known in the law previously as unfair competition. Unfair competition, it has been pointed out, has always been subject to restraint by courts upon suit by complainants claiming injury. Apparently, it is contended, the net total of the commission's efforts in this field, while substantial, are not largely in excess of what would have been the results under general rulings of law. The contention is made, therefore, that when Congress established the commission it transferred the burden and expense of such suits to the public treasury instead of leaving the costs to the parties directly interested.

The provisions of the Clayton anti-trust act administered by the Federal Trade Commission, primarily designed to prevent the growth of monopolies by the acquiring by one corporation of other corporations, received complete exposition in three cases just decided by the Supreme Court. In one of these, that of the Western Meat Co., where this interest had acquired the share capital of a possible competitor, the commission alleged that this acquisition "was substantially lessening competition between competitors." This conclusion was approved by the commission, and it issued an order requiring the Western Meat Co. to divest its competitor stock. With slight modifications this order was upheld by the court. In two other cases decided in the same opinion, those of the Thatcher Mfg. Co., maker of bottles and glasses, and Swift & Co., the acquisition of alleged competitors had been accomplished by the purchase of the physical assets of such companies and the consolidation thereby effected. Such acquisition had been challenged under the powers of the same section of the Clayton act. In these two cases the Supreme Court reversed the order of the commission, stating that: "The commission is without authority to require one who has secured actual title and possession of physical property before proceedings were begun against it to dispose of same, although secured through an unlawful purpose." It is maintained that the upshot has been to leave the Federal Trade Commission practically powerless under the Clayton act, and with curtailed authority under the Federal Trade Commission act. Pending cases before the commission relating to steel companies were instituted under the unfair methods competition section of the latter law.

"Cease and Desist" Ruling

Another important and recent decision affirmed the decision of the United States Circuit Court of Appeals in New York, covering the ruling of the commission in ordering a manufacturing concern to "cease and desist" a number of practices claimed to be in violation of the law relating to the maintenance of prices after sales to distributers. In the other decision the Supreme Court held that the General Electric Co. had not violated the anti-trust law in agreeing with another interest to sell products at a given price.

The broader privileges which the Supreme Court seems to have given to corporations to legitimately reduce competition through price maintenance as a means of protecting producers from actual loss apparently provides a tangible and legal basis for proper price maintenance.

In one of the Supreme Court decisions it was pointed out that "price maintenance is unlawful when it tends to create a monopoly; but when there is nothing to show an intention to accomplish purposes of price fixing, the practice of price maintenance is within the law."

American Steel Foundries Buys Verona Steel Castings Co.

The American Steel Foundries, Chicago, has bought the plant of the Verona Steel Castings Co., Verona, Pa., from the Standard Steel Car Co., and it is now known as the Verona Works of the American Steel Foundries. C. D. Carey, who has been vice-president and general manager of the Verona company, remains in charge of the plant under its new ownership. The plant was built in 1905 to supply steel castings to the Standard Steel Car Co. and has one acid and two basic open-hearth furnaces, each of 25 tons rated capacity. It is capable of producing 25,000 tons of castings annually.

Merger of Cold-Finished Steel Bar Companies Proposed

PITTSBURGH, Dec. 6.—A reported combination of cold-finished steel bar manufacturers, taking in five companies, one each in Pittsburgh, Beaver Falls, Pa., Youngstown, Cleveland and Chicago, is regarded here as being merely in the initial stage, and it is added that at this stage there is usually a good deal more talk than action. The companies most often mentioned as likely to enter the proposed merger are the Wyckoff Drawn Steel Co., Pittsburgh, the plant of which is at Economy, Pa.; the Moltrup Steel Products Co., Beaver Falls, Pa.; the Fitzsimons Co., Youngstown, Ohio; the Cuyahoga Steel & Wire Co., Bedford, Ohio, near Cleveland, and Bliss & Laughlin, Inc., Harvey, Ill. Such a combination would have a strategic position geographically and would have an annual capacity of well over 100,000 tons, which would be between one-sixth and one-seventh of the annual production of cold-finished steel bars.

Prices of General Electric Motors Reduced

A reduction in prices on its general purpose motors, amounting to 5 per cent on most lines and 10 per cent on commonly used sizes of squirrel-cage induction motors, has been announced by the General Electric Co., effective Dec. 1. The motors affected by the new price levels include both a.c. and d.c., constant and variable speed general purpose motors, from one to 200 horsepower.

Prices of standard squirrel-cage induction motors have now been brought by the company to a level within about 10 per cent of that in 1914.

Coincident with this reduction in prices, the General Electric Co. has announced a unified schedule of discounts for different classes of purchasers. The discount for quantity purchased at one time, on one firm order, has been made uniform on a sliding schedule for all classes of buyers.

Sales in October by members of the Foundry Equipment Manufacturers' Association totaled $396,354, a loss of 1 per cent as compared with September and a recession of 5 per cent from the amount reported for October, 1925. Shipments for October, at $447,189, were 18 per cent larger than those of September and ½ per cent larger than those of October, 1925. Orders on hand Nov. 1 totaled $524,612, a gain of 0.04 per cent over the amount on Oct. 1.

STREET CARS OF ALUMINUM

First One Operating in Cleveland—Advantage in Matter of Weight

An aluminum street car, built by the Cleveland Railway Co., was placed in operation in Cleveland, Dec. 1. This is an experimental car which is said to be the first aluminum car ever built in America. The design follows the company's standard specifications for a steel car of the same type and, with only two or three exceptions, the dimensions of the aluminum parts are the same as those of the steel car of the same type.

The aluminum alloy parts of the car are in the form of forgings, castings, light plates, tubing and standard formed sections. The side sills, rear bumper, the left hand support of the front platform and a few minor parts of the body are steel, aluminum or its alloys being substituted for all other parts and accessories. In the trucks aluminum alloys have been substituted for practically all steel parts excepting wheels, brakes, axles, springs, journals and journal boxes. Aluminum parts also include the coupler, drawbar, floor frame cross members, seats, grip handles, ventilators, window sash and covers and other parts on the motor housings. The body side plates are of heavier gage than those on the steel cars, these being 0.125 in. in thickness as compared with the 0.102 in. steel plates. Four grades of aluminum alloys are used in the car. Two grades used in forgings and in plates and extruded standard sections have an ultimate tensile strength of 55,000 to 60,000 lb. per sq. in.

Steel Rivets Are Used

Steel rivets are used throughout in the construction, as the company desired to have the car finished at a definite date and did not think it practical, in the limited time available, to develop practices for tempering and hot driving strong alloy rivets in shops unfamiliar with their use.

The weight of the car is 30,200 lb. as compared with 43,200 lb. for the steel car—a saving of 6½ tons or 30 per cent. If the experimental car proves successful, as expected, the company will probably build more, first making some changes in the design, increasing the size of a few of the aluminum members and substituting aluminum for some of the parts that are of steel in the experimental car, making the car somewhat lighter than the one built.

Operates with Less Noise

The construction of this car is the result of a tendency toward lighter weight street cars without sacrificing strength or durability. Another tendency among traction companies is to provide quieter running cars. It is believed that the one built of aluminum will prove less noisy than the steel cars. From the standpoint of economy the most important advantage that the aluminum car is expected to show is the reduced power consumption because of its lighter weight. It has four 35-hp. motors instead of four 40-hp. motors that are used on the steel car of the same type. Two days' operations showed a 20 per cent reduction in power consumption.

The cost of building an aluminum car is about 10 per cent or $1,500 more than the initial cost of one of steel, but if the power consumption is reduced in the same proportion as the weight the saving in power will pay for the extra cost in 18 months. Other advantages claimed are the decrease in the wear on the rails and the ease in handling and repairing.

The traction company will keep the car under careful observation in regular service conditions for several months to ascertain the power consumption and effects of vibration and to study other factors that will enable it to form definite conclusions as to its success. The car was built at the shops of the Cleveland Railway Co. with the collaboration of the Aluminum Co. of America, which supplied the various aluminum alloys, and the J. G. Brill Co.

Charles M. Schwab Predicts Great Development at Sparrows Point

As the guest of honor at a dinner given by the Baltimore Association of Commerce, Dec. 3, Charles M. Schwab told 800 Baltimore business men that within 10 years the Sparrows Point plant of the Bethlehem Steel Corporation will be the greatest steel plant in the world. "Some of you thought I was dreaming when I spoke in 1916 of our plans for Sparrows Point," he said. "You have seen them realized, and much more than realized. You will see this dream of mine come true when, ten years hence, I come among you again."

Mr. Schwab said the geographical location of Baltimore was advantageous for industrial development in all lines and unequaled in America. Sparrows Point, he said, is turning out seven times as much steel as 10 years ago, running close to 200,000 tons a month. The payroll has grown to $25,000,000 a year. Mr. Schwab said he expected to see Baltimore eclipse Pittsburgh as a steel center.

Supply Men to Hold Convention on Boat

The National Supply and Machinery Distributers Association, at a meeting of its executive committee at the Philadelphia office of the association, decided to hold its next annual convention on the steamship Noronic, which will leave Detroit, Monday, June 13, returning there Friday, June 17. The Southern Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association will meet with the National association.

It was decided to compile and publish a directory giving names, addresses and full data regarding the products handled by active and associate members.

George A. Fernley is secretary of the National Supply and Machinery Distributers' Association, and his office is at 505 Arch Street, Philadelphia.

Power Transmission Association Organized

Following a decision to proceed on a permanent basis, officers of the Power Transmission Association were elected at the second meeting of the organization committee held recently in New York. The association is made up of more than 100 manufacturers of mechanical power transmission and allied equipment.

W. H. Fisher, secretary and sales manager of the T. B. Wood's Sons Co., Chambersburg, Pa., was elected president. Vice-presidents elected to represent each of the seven groups of manufacturers in the association are as follows:

Leather belting manufacturers, F. H. Willard, president of the Graton & Knight Mfg. Co., Worcester, Mass.

Tanners and curriers, E. D. McKown, vice-president of the Hans Rees' Sons & Co., New York.

Power transmission equipment, G. H. Miller, president of the Dodge Mfg. Corporation, Mishawaka, Ind.

Pulley manufacturers, W. R. Simpson, vice-president of the American Pulley Co., Philadelphia.

Hanger manufacturers, S. A. Ellicson, president of the Chicago Pulley & Shafting Co., Chicago.

Accessory manufacturers, W. K. Lee, president of the Clipper Belt Lacer Co., Grand Rapids, Mich.

Fabric-base belt manufacturers, B. J. Kieley, president of the R. & J. Dick Co., Passaic, N. J.

The vice-president representing the mechanical rubber group is to be named later, the selection of a permanent secretary having also been deferred.

L. H. Shingle, president of the Shingle-Gibb Leather Co., Philadelphia, was elected treasurer. Two members of each of the above named groups will be represented on the board of directors. A meeting of the officers of the association was planned for Dec. 8 at the Hotel Commodore, New York.

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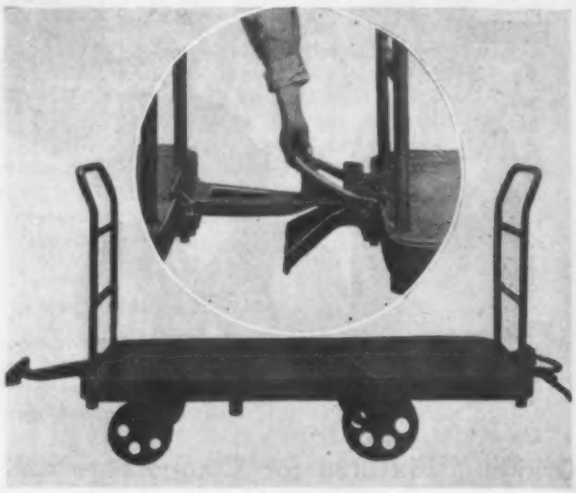
An automatic coupling for industrial trailers, known as the "Clark hitch," has been put on the market by the Clark Tructractor Co., Buchanan, Mich. The hitch is made of malleable iron castings, designed for rough, heavy service. A coupling is effected by pushing the male part of the hitch, a hinged pointed member, into the socket of the female section. As the male point enters the socket, it slips under a steel loop, which automatically drops over a notch in the pointed member. Uncoupling is effected by lifting the loop either by hand or by rope or chain. The female socket serves as a pivot for the radial movement of the male member. An apron extending from the socket provides an upward pressure of the notched point against the loop. The apron flares out as it extends from the socket to permit the male part of the coupling to swing through a wide arc. The hitch members may be clamped to any trailer frame without any drilling.

A new caster-wheel trailer has been developed by the same company. The front wheels are of the caster type, 10 in. in diameter with a crown face, 3 in. wide. They are swivelled to a ⅝-in. steel plate, which is riveted to the frame of the trailer. The wheels are of cast steel and have heavy duty roller bearings in the hubs. The casters are equipped with large heavy duty thrust bearings. The rear wheels, which are mounted on an axle, are also of cast steel, 12 in. in diameter, with a 3½-in. crown face. The trailer is designed to turn within a very small radius and to permit straight trailing when a number of trailers are coupled together. The frame is of iron, and the platform, set flush with the frame, is of hard wood. Eight steel sockets in the frame, two on each of the four sides of the platform, have been provided for inserting racks or rails to hold the freight. The carrying capacity of the trailer is 4000 lb.



In the Trailer the Front Wheels Are on Casters That Permit Turning Within a Very Small Radius. The "hitch" (shown in circle) couples automatically. It is uncoupled by lifting a steel loop

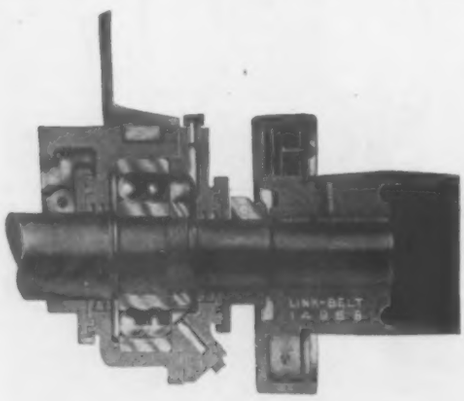
Ball-Bearing Vibrating Screen

A mechanically-operated vibrating screen incorporating only one moving part, which rotates in oversize ball bearings, has been placed on the market by the Link-Belt Co., 910 South Michigan Avenue, Chicago. Five standard sizes, ranging from 2 x 5 ft. to 4 x 8 ft., are available. Each size can be furnished with either one or two screening surfaces, adapting the machine for materials of varying size and capacities.

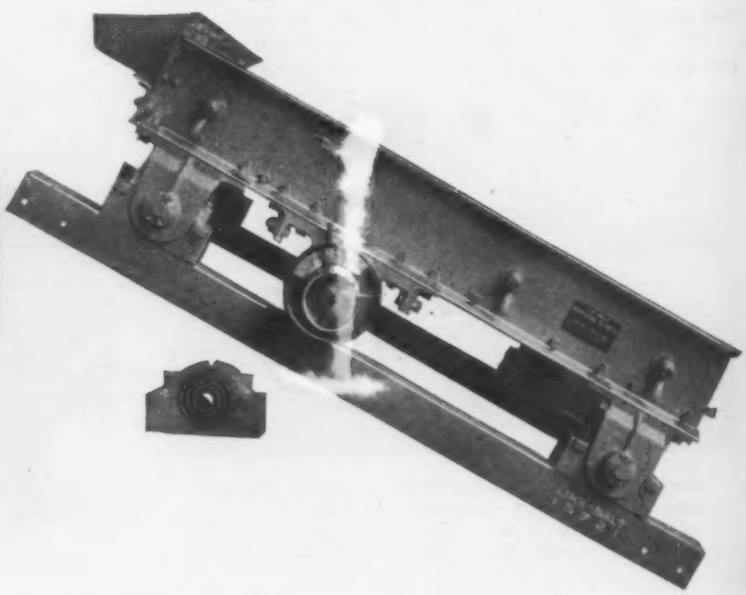
The vibrator consists of a shaft, driven at suitable speed from any common source of power. This shaft, thrown out of balance by adjustable counterweights, imparts vibrations to the screen box on which it is mounted, and these, in turn, are transmitted to the screen cloth secured, under tension, in the box.

The four corners of the screen box are mounted on flat spiral springs. The screen cloth is placed upon the deck with its two longitudinal edges bent up, binders being provided on the fine mesh cloths for protection against tearing. Two flanged clamp plates engage these binders or the bent edges of the cloth, and by tightening the wing nuts on each side, the cloth may be conveniently stretched to the desired tension. These side clamp plates serve the four-fold purpose of stretching the screen cloth, clamping the cloth to its deck, eliminating wear of screen box side frames, and preventing leakage along side edges. A longitudinal vibrator strip is provided to assist the screening action by imparting raps to the cloth, which is claimed to minimize wear and blinding. The binders may be detached quickly, and screen cloths are of standard width.

A feed hopper attached to the receiving end of screen box vibrates with it and controls the feed so that the material is spread uniformly over the screening surface. For screening materials containing small particles, the vibrating feed hopper is fitted with a counterweighted swinging feed gate. This combination is stressed as making it easy to receive a non-uniform feed, and spreading the material over the width of screen cloth at the proper speed. It is also credited with adding about 2 ft. to the effective length of the screen, and obviating the use of mechanical distributers.



Cross-Section Showing Assembly of Vibrator Pulley (Above)



Side View Showing Feed Hopper, Counterweighted Vibrator Pulley and Flat Spiral Springs (Right)

Transforming Coal Into Oil

Hydrogen Used in Process for Extracting Gasoline and Other Oils from Low-Grade Coal—Yield in Oil Is Half the Coal Weight

DIRECT liquefaction of coal by hydrogenation was described before the recent International Coal Conference at Pittsburgh by Dr. Friedrich Bergius, Heidelberg, Germany. He expressed himself as believing firmly that coal or a similar carbonaceous substance is the only raw material which can be used in an industrial process to manufacture artificial substitutes for oil. He told of the development, to a point of commercial practicability, of the extraction of gasoline and lubricating and fuel oils from low-grade coal and from fine coal and screenings.

While most of his paper was devoted to the technique of his own process, he spoke of others. Some of these processes of low-volatile distillation are practicable in yielding coke and low-temperature tar. The oil which they produce, however, is merely a by-product and in small quantity.

Hydrogen in a Double Reaction

Uncertainty was expressed as to the economy of manufacture of motor fuel by synthetic derivation from coal products. Coal in this process is transformed into coke, from which carbon monoxide is derived. This is made to react with hydrogen. In the transformation of coke to carbon monoxide, hydrogen is separated from the carbon and replaced by oxygen. Later on in the process this reaction is reversed. It is found that an excess of elementary hydrogen must be added for combination with the oxygen, if the latter is to be separated from the carbon.

As the expense of generating free hydrogen is considerable, it becomes particularly desirable to conserve the original hydrogen content of the coal. This is done by the Bergin process, in which the author is interested.

How the Bergin Process Operates

Coal for the Bergin process is ground to pass a 12-mesh sieve or finer and is then mixed with the heavy portion of the oil derived from the process. The resulting pasty material is forced into a pressure vessel, where it is heated, together with oil already in the vessel, to the temperature of reaction. For best results a pressure approximating 3000 lb. per sq. in. is required. Hydrogen is introduced with the coal and oil. When the products are withdrawn, the gas is separated from the liquid and the solid material. This takes place after all the material has been cooled and the pressure reduced.

About half the weight of the coal charge appears in the oil produced by this process. That is to say, one net ton of coal will yield 132 gal. of oil. By a somewhat different treatment a ton of bituminous coal will produce about 45 gal. of gasoline. It is said that this fuel has non-knocking qualities similar to those of a mixture of gasoline and benzol. Good lubricants are reported derivable from the oil produced by this process.

Construction has been begun in Germany on two plants based on this process. Their joint capacity will be about 1,000,000 bbl. per year of oil products.

MANGANESE INTERESTS UNITE

Indian Ore and Four British Producers Combine to Market Products

Negotiations have evidently been concluded between the Indian manganese ore producers and the British makers of ferromanganese so that a fusion of British Empire interests will be the result. According to the London *Iron and Coal Trades Review*, at a meeting of the Bengal-Nagpur Railway, which has greatly assisted in the development of the Indian manganese ore industry, Robert Miller, the chairman, alluded to a movement for merging some of the principal English ferromanganese makers. It is stated that the directors of the Central Provinces Manganese Ore Co., Ltd., have completed negotiations with four of the principal makers of ferromanganese in the United Kingdom for the supply of manganese ore and for the manufacture and sale of ferromanganese.

A company to be called the United Kingdom Ferromanganese Co., Ltd., has been registered with a capital of £350,000, divided into 50,000 common shares of £1 each and 300,000 6 per cent preferred shares of £1 each. The merger takes the form of a British Empire concern rather than an Anglo-Indian one because, although the Colonial steel making and manganese ore interests are not actually included in the combination, the new company will guarantee supplies to them in addition to guaranteeing the supply of ferromanganese to British steel works. The combination will act as a marketing and financing company only, the actual buying and selling being done by the constituents as hitherto.

There will be four directors of the new company, two being nominated by the Central Provinces Manganese Ore Co., M. Wilkinson and H. R. Holmes, chairman and managing director respectively of the company, and two by the ferromanganese makers, Edgar Beck and Col. W. Tomlinson. The company will supply manganese ore to the new undertaking at an agreed price and the ferromanganese makers will buy all the ore required from the latter. In turn the new company will buy from the ferromanganese makers the whole of their production of the alloy at a price which has been arranged and market it for the benefit of the ferromanganese makers and the Central Provinces Manganese Ore Co.

The four British makers interested in the new combination are Dorman, Long & Co., Ltd., (Carlton Iron Branch); the Darwin & Mostyn Iron Co., Ltd., the Wigan Coal & Iron Co., Ltd., and the United Steel Cos., Ltd. The two firms making ferromanganese, outside the combination, are the Linthorpe Dinsdale Smelting Co., Ltd., and Bolckow, Vaughan & Co., Ltd.

Regarding the general situation in England as to the supplies of ferromanganese, it is stated that the position is likely to remain stringent for some time. It is not expected that the coke plants will be turning out much coke until well into the first part of December and consequently there is not likely to be much ferromanganese produced in the blast furnaces before Christmas. Meanwhile prices are firmly maintained at the recent advance to £15 for both the home and export trade and there is every probability of a further upward movement almost immediately. Considerable export business is being refused at the present time, so that the small quantities available may be reserved for British trade. Manganese ore, also, is scarce and much higher, the present price being about 1s. 8½d. per unit, c.i.f. United Kingdom ports, for 48 to 50 per cent Indian ore.

It has been estimated by the United States Geological Survey that the original coal resources of the United States were 3444 billion tons. Of this amount 16 billions have been used and 8 or 9 billions wasted, leaving a present reserve of 3419 billion tons.

TRADE COMMISSION CURBED

Decision of United States Supreme Court Regarded as Limiting Its Authority

WASHINGTON, Dec. 7.—Recent decisions of the United States Supreme Court have limited the authority and power of the Federal Trade Commission, according to some legal minds who have been studying these opinions. These lawyers contend that, while the Supreme Court could not strip the commission of authority, its rulings have made clear that powers vested in the commission by Congress are much more limited than generally imagined.

There are some who contend that the powers of the commission are now limited to matters affecting false and misleading branding of goods. A few take the extreme view that the statutory powers of the commission are so narrowed as to make unnecessary the existence of the commission itself. However, the budget message of the President presented to Congress yesterday provides for $984,350 for the fiscal year of 1928 as against $997,000 for the fiscal year of 1927.

Unfair Methods Defined

The decisions of the Supreme Court have defined unfair methods of competition as meaning what was known in the law previously as unfair competition. Unfair competition, it has been pointed out, has always been subject to restraint by courts upon suit by complainants claiming injury. Apparently, it is contended, the net total of the commission's efforts in this field, while substantial, are not largely in excess of what would have been the results under general rulings of law. The contention is made, therefore, that when Congress established the commission it transferred the burden and expense of such suits to the public treasury instead of leaving the costs to the parties directly interested.

The provisions of the Clayton anti-trust act administered by the Federal Trade Commission, primarily designed to prevent the growth of monopolies by the acquiring by one corporation of other corporations, received complete exposition in three cases just decided by the Supreme Court. In one of these, that of the Western Meat Co., where this interest had acquired the share capital of a possible competitor, the commission alleged that this acquisition "was substantially lessening competition between competitors." This conclusion was approved by the commission, and it issued an order requiring the Western Meat Co. to divest its competitor stock. With slight modifications this order was upheld by the court. In two other cases decided in the same opinion, those of the Thatcher Mfg. Co., maker of bottles and glasses, and Swift & Co., the acquisition of alleged competitors had been accomplished by the purchase of the physical assets of such companies and the consolidation thereby effected. Such acquisition had been challenged under the powers of the same section of the Clayton act. In these two cases the Supreme Court reversed the order of the commission, stating that: "The commission is without authority to require one who has secured actual title and possession of physical property before proceedings were begun against it to dispose of same, although secured through an unlawful purpose." It is maintained that the upshot has been to leave the Federal Trade Commission practically powerless under the Clayton act, and with curtailed authority under the Federal Trade Commission act. Pending cases before the commission relating to steel companies were instituted under the unfair methods competition section of the latter law.

"Cease and Desist" Ruling

Another important and recent decision affirmed the decision of the United States Circuit Court of Appeals in New York, covering the ruling of the commission in ordering a manufacturing concern to "cease and desist" a number of practices claimed to be in violation of the law relating to the maintenance of prices after sales to distributers. In the other decision the Supreme Court held that the General Electric Co. had not violated the anti-trust law in agreeing with another interest to sell products at a given price.

The broader privileges which the Supreme Court seems to have given to corporations to legitimately reduce competition through price maintenance as a means of protecting producers from actual loss apparently provides a tangible and legal basis for proper price maintenance.

In one of the Supreme Court decisions it was pointed out that "price maintenance is unlawful when it tends to create a monopoly; but when there is nothing to show an intention to accomplish purposes of price fixing, the practice of price maintenance is within the law."

American Steel Foundries Buys Verona Steel Castings Co.

The American Steel Foundries, Chicago, has bought the plant of the Verona Steel Castings Co., Verona, Pa., from the Standard Steel Car Co., and it is now known as the Verona Works of the American Steel Foundries. C. D. Carey, who has been vice-president and general manager of the Verona company, remains in charge of the plant under its new ownership. The plant was built in 1905 to supply steel castings to the Standard Steel Car Co. and has one acid and two basic open-hearth furnaces, each of 25 tons rated capacity. It is capable of producing 25,000 tons of castings annually.

Merger of Cold-Finished Steel Bar Companies Proposed

PITTSBURGH, Dec. 6.—A reported combination of cold-finished steel bar manufacturers, taking in five companies, one each in Pittsburgh, Beaver Falls, Pa., Youngstown, Cleveland and Chicago, is regarded here as being merely in the initial stage, and it is added that at this stage there is usually a good deal more talk than action. The companies most often mentioned as likely to enter the proposed merger are the Wyckoff Drawn Steel Co., Pittsburgh, the plant of which is at Economy, Pa.; the Moltrup Steel Products Co., Beaver Falls, Pa.; the Fitzsimons Co., Youngstown, Ohio; the Cuyahoga Steel & Wire Co., Bedford, Ohio, near Cleveland, and Bliss & Laughlin, Inc., Harvey, Ill. Such a combination would have a strategic position geographically and would have an annual capacity of well over 100,000 tons, which would be between one-sixth and one-seventh of the annual production of cold-finished steel bars.

Prices of General Electric Motors Reduced

A reduction in prices on its general purpose motors, amounting to 5 per cent on most lines and 10 per cent on commonly used sizes of squirrel-cage induction motors, has been announced by the General Electric Co., effective Dec. 1. The motors affected by the new price levels include both a.c. and d.c., constant and variable speed general purpose motors, from one to 200 horsepower.

Prices of standard squirrel-cage induction motors have now been brought by the company to a level within about 10 per cent of that in 1914.

Coincident with this reduction in prices, the General Electric Co. has announced a unified schedule of discounts for different classes of purchasers. The discount for quantity purchased at one time, on one firm order, has been made uniform on a sliding schedule for all classes of buyers.

Sales in October by members of the Foundry Equipment Manufacturers' Association totaled $396,354, a loss of 1 per cent as compared with September and a recession of 5 per cent from the amount reported for October, 1925. Shipments for October, at $447,189, were 18 per cent larger than those of September and ½ per cent larger than those of October, 1925. Orders on hand Nov. 1 totaled $524,612, a gain of 0.04 per cent over the amount on Oct. 1.

STREET CARS OF ALUMINUM

First One Operating in Cleveland—Advantage in Matter of Weight

An aluminum street car, built by the Cleveland Railway Co., was placed in operation in Cleveland, Dec. 1. This is an experimental car which is said to be the first aluminum car ever built in America. The design follows the company's standard specifications for a steel car of the same type and, with only two or three exceptions, the dimensions of the aluminum parts are the same as those of the steel car of the same type.

The aluminum alloy parts of the car are in the form of forgings, castings, light plates, tubing and standard formed sections. The side sills, rear bumper, the left hand support of the front platform and a few minor parts of the body are steel, aluminum or its alloys being substituted for all other parts and accessories. In the trucks aluminum alloys have been substituted for practically all steel parts excepting wheels, brakes, axles, springs, journals and journal boxes. Aluminum parts also include the coupler, drawbar, floor frame cross members, seats, grip handles, ventilators, window sash and covers and other parts on the motor housings. The body side plates are of heavier gage than those on the steel cars, these being 0.125 in. in thickness as compared with the 0.102 in. steel plates. Four grades of aluminum alloys are used in the car. Two grades used in forgings and in plates and extruded standard sections have an ultimate tensile strength of 55,000 to 60,000 lb. per sq. in.

Steel Rivets Are Used

Steel rivets are used throughout in the construction, as the company desired to have the car finished at a definite date and did not think it practical, in the limited time available, to develop practices for tempering and hot driving strong alloy rivets in shops unfamiliar with their use.

The weight of the car is 30,200 lb. as compared with 43,200 lb. for the steel car—a saving of 6½ tons or 30 per cent. If the experimental car proves successful, as expected, the company will probably build more, first making some changes in the design, increasing the size of a few of the aluminum members and substituting aluminum for some of the parts that are of steel in the experimental car, making the car somewhat lighter than the one built.

Operates with Less Noise

The construction of this car is the result of a tendency toward lighter weight street cars without sacrificing strength or durability. Another tendency among traction companies is to provide quieter running cars. It is believed that the one built of aluminum will prove less noisy than the steel cars. From the standpoint of economy the most important advantage that the aluminum car is expected to show is the reduced power consumption because of its lighter weight. It has four 35-hp. motors instead of four 40-hp. motors that are used on the steel car of the same type. Two days' operations showed a 20 per cent reduction in power consumption.

The cost of building an aluminum car is about 10 per cent or $1,500 more than the initial cost of one of steel, but if the power consumption is reduced in the same proportion as the weight the saving in power will pay for the extra cost in 18 months. Other advantages claimed are the decrease in the wear on the rails and the ease in handling and repairing.

The traction company will keep the car under careful observation in regular service conditions for several months to ascertain the power consumption and effects of vibration and to study other factors that will enable it to form definite conclusions as to its success. The car was built at the shops of the Cleveland Railway Co. with the collaboration of the Aluminum Co. of America, which supplied the various aluminum alloys, and the J. G. Brill Co.

Charles M. Schwab Predicts Great Development at Sparrows Point

As the guest of honor at a dinner given by the Baltimore Association of Commerce, Dec. 3, Charles M. Schwab told 800 Baltimore business men that within 10 years the Sparrows Point plant of the Bethlehem Steel Corporation will be the greatest steel plant in the world. "Some of you thought I was dreaming when I spoke in 1916 of our plans for Sparrows Point," he said. "You have seen them realized, and much more than realized. You will see this dream of mine come true when, ten years hence, I come among you again."

Mr. Schwab said the geographical location of Baltimore was advantageous for industrial development in all lines and unequaled in America. Sparrows Point, he said, is turning out seven times as much steel as 10 years ago, running close to 200,000 tons a month. The payroll has grown to $25,000,000 a year. Mr. Schwab said he expected to see Baltimore eclipse Pittsburgh as a steel center.

Supply Men to Hold Convention on Boat

The National Supply and Machinery Distributers Association, at a meeting of its executive committee at the Philadelphia office of the association, decided to hold its next annual convention on the steamship Noronic, which will leave Detroit, Monday, June 13, returning there Friday, June 17. The Southern Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association will meet with the National association.

It was decided to compile and publish a directory giving names, addresses and full data regarding the products handled by active and associate members.

George A. Fernley is secretary of the National Supply and Machinery Distributers' Association, and his office is at 505 Arch Street, Philadelphia.

Power Transmission Association Organized

Following a decision to proceed on a permanent basis, officers of the Power Transmission Association were elected at the second meeting of the organization committee held recently in New York. The association is made up of more than 100 manufacturers of mechanical power transmission and allied equipment.

W. H. Fisher, secretary and sales manager of the T. B. Wood's Sons Co., Chambersburg, Pa., was elected president. Vice-presidents elected to represent each of the seven groups of manufacturers in the association are as follows:

Leather belting manufacturers, F. H. Willard, president of the Graton & Knight Mfg. Co., Worcester, Mass.

Tanners and curriers, E. D. McKown, vice-president of the Hans Rees' Sons & Co., New York.

Power transmission equipment, G. H. Miller, president of the Dodge Mfg. Corporation, Mishawaka, Ind.

Pulley manufacturers, W. R. Simpson, vice-president of the American Pulley Co., Philadelphia.

Hanger manufacturers, S. A. Ellicson, president of the Chicago Pulley & Shafting Co., Chicago.

Accessory manufacturers, W. K. Lee, president of the Clipper Belt Lacer Co., Grand Rapids, Mich.

Fabric-base belt manufacturers, B. J. Kieley, president of the R. & J. Dick Co., Passaic, N. J.

The vice-president representing the mechanical rubber group is to be named later, the selection of a permanent secretary having also been deferred.

L. H. Shingle, president of the Shingle-Gibb Leather Co., Philadelphia, was elected treasurer. Two members of each of the above named groups will be represented on the board of directors. A meeting of the officers of the association was planned for Dec. 8 at the Hotel Commodore, New York.

MAKES SURVEY OF WAGE PLANS

Finds Straight-Time Basis of Wage Payment Still Ruling Method

The straight-time basis of wage payment is still the ruling method employed in American industry, according to a survey recently completed by the technical and industrial research division of the Sherman Corporation, engineers, Boston. Three thousand questionnaires were mailed to representative companies in the various classifications of industry and over 1000 replies—better than a 33 per cent response—were received. Over a half-million employees are represented in the findings.

WAGE PAYMENT METHODS IN INDUSTRY

	Per Cent of Employees in Plants Surveyed		
	Straight Time	Piece Rate	Premium or Bonus
General average (all industries surveyed)	61	31	8
Agricultural implements	56	42	2
Automotive products	17	18	65
Bakeries—bread, cake, biscuit	63	30	7
Beverages	81	14	5
Building materials—brick, clay products, stone, etc.	60	37	3
Candy and confectionery	65	32	3
Chemical and pharmaceutical	65	18	17
Clothing—men's and women's garments, etc.	32	67	1
Construction—buildings and public works	100	..	..
Dental equipment	52	5	43
Dairy products	96	4	..
Electrical products and radio	60	39	1
Flour and feed	90	5	5
Food products	82	10	8
Foundries—cast iron, malleable, steel and alloy	55	41	4
Furniture	57	38	5
Glassware and pottery	55	32	13
Hardware, toys and specialties	46	45	9
Ice and cold storage	95	5	..
Jewelry, watches, clocks and optical instruments	41	54	5
Knitwear, hosiery, underwear, etc.	29	67	4
Lumber, millwork and wood products	79	6	15
Machinery	68	18	14
Meat packing—beef, pork, etc.	88	12	..
*Metals and metal products	49	27	24
Musical instruments	18	75	7
Oils, paints, inks, etc.	81	18	1
Paper mills	81	7	12
Printing, publishing and lithographing	69	7	24
Power plant equipment	75	18	7
Public utilities—water, gas, electricity, etc.	100	..	..
Railroad equipment—cars, locomotives, etc.	31	68	1
Rubber tires and products	20	80	..
Shipbuilding	90	10	..
Shoes	22	76	2
Stoves, furnaces and radiators	49	46	5
Tanneries	69	24	7
Textiles—cotton, silk, rayon, wool, etc.	46	33	21
Tobacco products	29	71	..
Miscellaneous	70	30	..

*Steel included. In steel industry 10.4 per cent of the employees of mills reporting, on tonnage basis.

For industry in general it was found that 61 per cent of the employees are on the straight-time basis of wage payment; 31 per cent are on a piece-rate basis, and 8 per cent are under a premium or bonus plan. In the manufacture of metals and metal products 49 per cent of the employees are paid straight-time wages, 27 per cent are on piece rates, and 24 per cent are paid premiums or bonuses. In this group is included the steel industry, for which 10.4 per cent of the employees of the mills reporting are on a tonnage basis. In the machinery industry 68 per cent of the employees are on straight-time wages, 18 per cent are on piece rates, and 14 per cent are paid premiums or bonuses.

There are relatively few plants in which straight-time payment is exclusive, although in industries such as construction and public utilities, this method of payment is the only one in use. However, in the plants using some form of wage other than straight time, a great many workers are left untouched by any incentive basis. The number of employees affected by advanced forms of wage payment, exemplified by the individual or group bonus methods, is surprisingly small, only 8 per cent.

It is significant, thinks the Sherman Corporation, that the automotive industry leads in the percentage of workers under premium or bonus plans, 65 per cent being under such methods. The productivity of labor in that industry per man-hour has increased over 200 per cent in 10 years. Six billion dollars annually in wages is disbursed. The industry's financial structure has grown tremendously. It seems logical, says the Sherman Corporation, to conclude that a certain connection exists between the advanced policies and practices in reference to wage payment in the automotive field and the outstanding position of that industry.

In the face of this showing is the high straight-time percentage in industries as a whole, 61 employees out of every 100 receiving wages without regard to output. In the last published report of earnings of all corporations, says the Sherman Corporation, only 60 per cent of them reported profits; the remaining 40 per cent showed losses aggregating over $2,000,000,000. The profit position of that 40 per cent, in the opinion of the Sherman Corporation, must bear some relation to the predominance of straight-time wage methods.

To Simplify Metal Spools and Reels

WASHINGTON, Dec. 7.—Representing approximately 90 per cent of the annual production, manufacturers of metal spools and reels at a meeting here on Thursday of last week under the auspices of the National Committee on Metals Utilization took preliminary steps looking to a reduction in sizes and varieties of these commodities. The meeting was in charge of Edwin W. Ely of the committee.

In contemplating what the scope of their first application of simplification to metal spools and reels should be the conferees constituted themselves a Committee of the Whole with Frank Mossberg, of the Mossberg Press Steel Corporation, as chairman. The function of this committee will be to conduct a survey of the present conditions in the industry as a first step in the direction of framing a tentative simplified practice recommendation. This survey will concern itself with the major production and demand of metal take-off reels, metal reels for handling welding wire and metal spools for handling and shipping bare wire up to 50 lb. The Simplified Practice Committee selected Jan. 15, 1927, as a tentative date when the chairman will make a report of the results of this survey to the national committee. In addition to Mr. Mossberg and Mr. Ely the conference was attended by W. A. Bilger, American Pulley Co., Philadelphia, and E. J. Hubbard, Hubbard Spool Co., Chicago.

Indiana Conference on Welding

The second annual Indiana conference on welding will be held at Purdue University, Lafayette, Ind., Dec. 15, 16 and 17. The program consists of a short course and round table discussions. Both electric and gas welding demonstrations will be made, while a number of manufacturing companies will exhibit their equipment. Plant officials, superintendents and foremen especially have been invited to participate in the conference, which last year was attended by 175 men from 38 cities in the State.

Schedule of the next installments of the ***Business Analysis and Forecast,*** *by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows:* ***Dec. 16****—Activity in Steel Consuming Industries;* ***Dec. 23****—Position of Iron and Steel Producers;* ***Dec. 30****—General Business Outlook.*

In This Issue

Are profits and methods of wage payment directly related?—Investigation suggests that the industries making the greatest use of the newer forms of compensation (individual premiums, group bonuses, etc.) show the highest earnings. Automotive industry, for instance, has two-thirds of its workers on a bonus basis.—Page 1634.

Iron castings used in machine tool construction should be low in total carbon.—Metallurgist believes that gray iron will increase in favor, declaring that a fine-grained iron, of nearly pearlitic matrix, is the ideal material for the purpose.—Page 1616.

Coal can be pulverized so finely that it can be handled as a liquid.—May be used as a fuel in internal combustion engines. If burned in a furnace a shorter fire box will suffice, as in burning oil.—Page 1619.

Strength of welds increased about 26 per cent by using high test welding rod.—In testing 500 samples of single-vee buttwelded firebox quality plate nearly half the specimens broke in the plate rather than in the weld. Strength was found to be 58,000 lb. per sq. in., but only 47,000 lb. when Norway iron welding rod was used.—Page 1620.

Gravity conveyor supplants ingot chariot car in new Ford blooming mill.—Mechanically operated tilter and chute handle ingots from the soaking pits to the ingot run.—Page 1621.

Supreme Court upholds Trade Commission's order that capital stock in competitive firm must be sold.—But denies the commission's power to order the disposal of physical properties purchased from competitors.—Page 1632.

Can make 45 gal. of gasoline from one ton of coal.—New process operates by heating crushed coal and coal oil under pressure. Promoter declares that lubricating oil can also be made from coal.—Page 1631.

Aluminum street car 30 per cent lighter than steel car.—Consumes 20 per cent less power and costs but 10 per cent more. Said to run more smoothly and with less wear on rails.—Page 1633.

Detects silicon in iron by etching with iodine solution.—Best results are produced by employing an alcoholic mixture, 1:10, of 0.1 per cent normal iodine.—Page 1618.

Recommends that all manufacturers who can make ordnance in emergency be given small orders to familiarize themselves with the work.—Chief of Ordnance points out that there is no substitute for actual experience.—Page 1638.

Shaped rollers in new Ford continuous blooming mill automatically turn ingots on edge between passes.—Need for manual operation of manipulator controls is thereby eliminated.—Page 1623.

Questions the advisability of substituting steel for cast iron in some parts of machine tool driving mechanisms.—"A certain amount of 'flywheel effect' is desirable," says metallurgist. This is sacrificed when the lighter, stronger material is used. High test cast iron gives excellent service.—Page 1616.

How high can boiler temperature go with safety?—Metallurgists question the conclusion that "metal is stable at all loads which are under the proportional limit for the temperature used," irrespective of time. Declare that this is not true so far as temperatures of 1250 and 1500 deg. Fahr. are concerned and doubt that it is correct for lower temperatures.—Page 1639.

Industry's coal stocks are larger.—Bituminous supplies were 45.5 million tons on Nov. 1, a gain of 3 per cent over Oct. 1, purchasing agents' organization reports. October output of 54.6 million tons set a new record.—Page 1619.

Prophesies that strip steel even wider than 48 in. will be made.—Mills for this size are being designed and built now, and as the industry is "still in its infancy," with the passage of time will come greater widths and lighter gages.—Page 1640.

Government alleges anti-dumping act has been violated.—Importers of German steel take a serious view of the situation and believe it will result in a public hearing, in which the importers as well as domestic producers will appear.—Page 1643.

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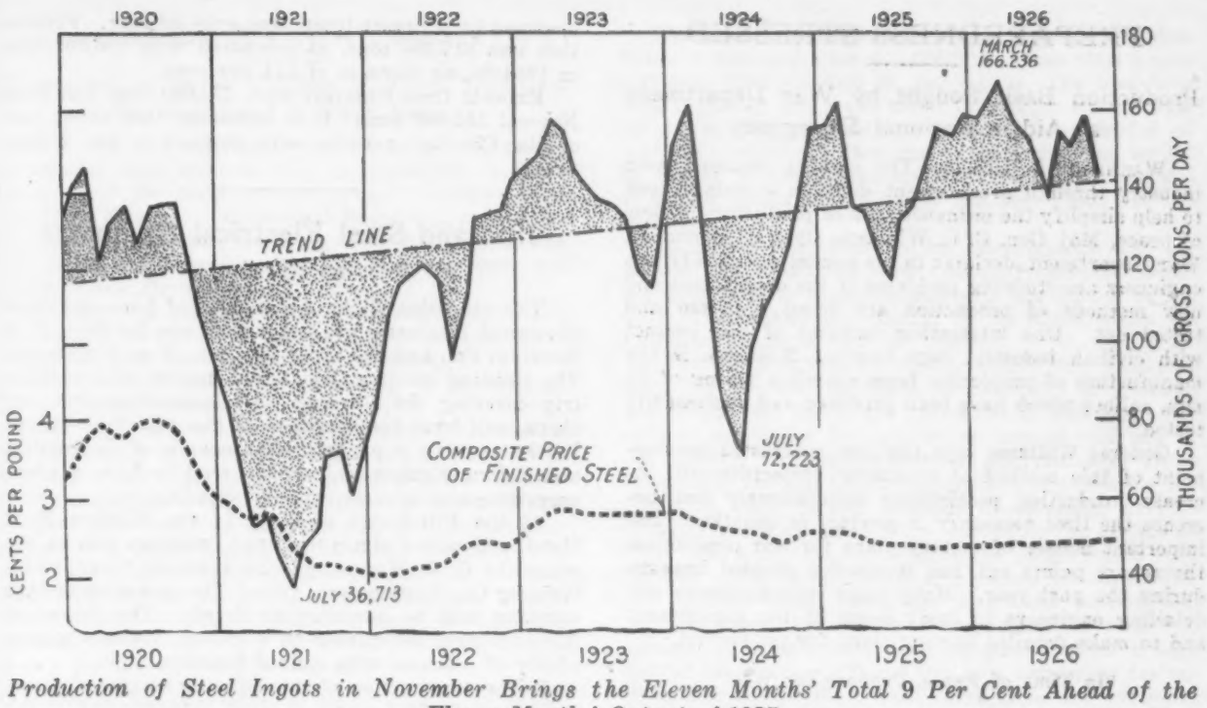
Appreciations from Foreign Visitors

AMERICANS visiting industrial Europe, especially when they have been members of some association group, have commonly felt we could approach with difficulty, let alone equal, the brand of hospitality shown in Europe in the reception, care and entertainment of guests. Apparently we exaggerate our own incapacity as hosts. Recently THE IRON AGE has received numerous letters from visitors from Great Britain and the Continent, especially from those who came for the international foundry congress at Detroit. Uniformly the expressions have been of unqualified satisfaction over the opportunities and facilities to observe. They are sincere acknowledgments of functions that have proved pleasant as well as profitable.

These testimonials, not intended for publication, give a composite that is certainly calculated to justify on broad grounds the making of international meetings. The letters are a reward for efforts expended, and readers who have had individual proofs of appreciation will be glad to know of the breadth of the good impressions gained.

For News Summary See Reverse Side



Production of Steel Ingots in November Brings the Eleven Months' Total 9 Per Cent Ahead of the Eleven Months' Output of 1925

November Ingot Output at 80 Per Cent

Brings Eleven Months Total to Within 500,000 Tons of All of 1925 and Points to a 1926 Production 6 to 7 Per Cent over 1925

RETURNS from the makers of steel for the production of November indicate a total of over 3,722,000 gross tons of ingots, or 9 per cent off from October. The November percentage of operations is put at 79.73, considering capacity 55,844,000 tons per annum. The total output for eleven months, in excess of 43,661,000 tons, is thus about 9 per cent greater than the production for the first eleven months of 1925, which was about 40,170,000 tons. The eleven months performance of this year is within 500,000 tons of the twelve months of last year. No more than a 70 per cent operation in December would bring the year's ingot output close to 47,000,000 tons, so that 1926 promises to produce between 6 and 7 per cent more than 1925.

The statistics, collected by the American Iron and Steel Institute, show that the November production of the companies which made 94.50 per cent of the country's total in 1925 was 3,517,402 tons. Assuming that the 5.50 per cent not reporting produced at the same rate, a total November output is indicated of 3,722,119 tons, from which a daily rate of 143,158 tons was calculated, allowing for 26 working days. According to the estimates of the institute, November operations were 79.73 per cent of "theoretical" capacity, compared with, roughly, 88, 84, 86 and 78 for October, September, August and July respectively. At the peak of the year in March this percentage was 92.58 per cent, and the average so far this year is 85.32 compared with 78.3 per cent last year.

The table gives the reported production by months of the different kinds of steel, together with the estimated daily rate for all companies.

Production of Steel Ingots

(Gross Tons)

Months 1926	Reported by Companies Which Made 94.50 Per Cent of the Steel Ingot Production in 1925: Open-Hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies
Jan.	3,326,846	581,683	13,664	4,150,469	159,633
Feb.	3,023,829	556,031	12,818	3,801,776	158,407
March	3,590,791	635,680	15,031	4,488,362	166,236
April	3,282,435	601,037	13,652	4,123,941	158,613
May	3,201,230	516,676	10,437	3,945,336	151,744
June	3,036,162	498,764	9,441	3,750,653	144,256
July	2,911,375	526,500	12,372	3,651,055	140,425
Aug.	3,145,055	627,273	12,003	4,004,583	154,022
Sept.	3,089,240	612,588	12,660	3,930,675	151,180
Oct.	3,224,584	630,526	12,348	4,092,548	157,406
Nov.	2,915,558	592,239	9,605	3,722,119	143,158
11 Mos.	34,747,105	6,378,997	134,031	43,661,517	153,198
1925					
Jan.	3,263,256	689,996	11,960	4,193,281	155,307
Feb.	2,933,225	602,042	12,998	3,752,352	156,348
March	3,337,721	614,860	13,633	4,194,340	161,321
April	2,858,866	515,715	14,182	3,583,676	137,834
May	2,755,561	497,708	13,790	3,454,971	132,883
June	2,540,729	476,945	12,490	3,204,451	123,248
July	2,446,068	457,095	13,547	3,084,472	118,634
Aug.	2,698,285	523,734	12,914	3,420,998	131,577
Sept.	2,738,673	547,121	13,977	3,489,565	134,214
Oct.	3,077,114	584,567	15,624	3,888,314	144,030
Nov.	3,092,194	581,347	17,085	3,902,900	156,116
11 Mos.	31,741,692	6,091,130	152,200	40,169,820	140,947
Dec.	3,169,796	569,304	15,843	3,970,918	152,728
Total	34,911,488	6,660,434	168,043	44,140,738	141,932

Conference on Boiler Plant Auxiliaries

A conference on auxiliaries of the boiler plant will be held on Thursday, Dec. 16, in the Blue Room, William Penn Hotel, Pittsburgh, under the auspices of the mechanical section of the Engineers Society of Western Pennsylvania. George A. Orrok, consulting engineer, New York, will present a paper, "Small Turbines," and G. E. Dignan, chief engineer Rust Engineering Co., Pittsburgh, one on "Boiler Settings," at the morning session, while J. G. Estep, assistant professor mechanical engineering, Carnegie Institute of Technology, at the afternoon session will have as his subject "Characteristics of Fans." An informal dinner and entertainment in the evening will conclude the conference.

PREPAREDNESS STRESSED

Production Basis Sought by War Department as Aid in National Emergency

WASHINGTON, Dec. 6.—The contact obtained with industry through procurement districts is doing much to help simplify the ordnance task of production in time of peace, Maj. Gen. C. C. Williams, Chief of Ordnance, War Department, declares in his annual report. Civilian engineers are studying problems of the department and new methods of production are being proposed and tested out. One interesting outcome of the contact with civilian industry, says General Williams, is the manufacture of projectiles from seamless tubing of 75 mm. caliber which have been produced and successfully tested.

General Williams says that the successful development of this method of producing projectiles will increase production possibilities tremendously and decrease the time necessary to produce in quantity. The important matter of factory plans for war production, the report points out, has received a decided impetus during the past year. Many large manufacturers are detailing engineers to study needs of the department and to make detailed factory plans for production.

"In Time of Peace, Prepare for War"

Discussing experimental and development work in the manufacture of new material the report says, in part:

"Upon approval of the 10-year program in principle by the War Department, I prepared a schedule of manufacture under which each type of material would be manufactured not only in Government establishments but also by one or more industrial establishments. Manufacture of ordnance in an emergency can, of course, be conducted best by those who have had experience in its manufacture in time of peace. I consider it most important that as many industrial firms as possible undertake orders for manufacture of moderate quantities of ordnance and thus acquire information which would be of the greatest value in the conduct of war manufacture.

"Manufacture in this manner also provides the best means of insuring that the new types proposed meet the requirements of manufacture on a production basis and that technical errors in the design of parts or in the specifications may be corrected in practice. The schedule of manufacture referred to was approved by the Assistant Secretary of War and will be put into effect when funds are secured for the manufacture of such limited quantities of material."

American Locomotive Co. Sells St. Louis Plant Site

The Commonwealth Steel Co., St. Louis, has purchased for $258,840 the site of 172.56 acres owned by the American Locomotive Co. adjacent to Granite City, Ill., upon which the latter had intended to build a $25,000,000 plant for the manufacture of locomotives. The Commonwealth company has relieved the American Locomotive Co. of this investment with the understanding that it may repurchase if at any time it decides that conditions have changed to make the building of the plant desirable.

Russian Manganese Ore Output Increases

WASHINGTON, Dec. 7.—Manganese ore production in the Soviet Union virtually doubled during the Soviet fiscal year ended Sept. 30, 1926, according to advices received by the Russian Information Bureau. Production was about 25 per cent greater than that of 1913.

Under the first year of operation by the Harriman Georgian Manganese Co. the output of the Chiaturi fields, in Soviet Georgia, was 772,000 metric tons, as compared with 436,000 tons in 1924-25, an increase of over 80 per cent. The increase in the Nikopol fields, operated by a Soviet trust, was even greater. Production was 815,000 tons, as compared with 380,000 tons in 1924-25, an increase of 114 per cent.

Exports from Chiaturi were 472,000 tons and from Nikopol 235,000 tons. It is estimated that about half of the Chiaturi exports were shipped to the United States.

Iron and Steel Electrical Engineers to Meet

Two meetings of the Association of Iron and Steel Electrical Engineers are announced, one for Dec. 10 at Reading, Pa., and the other for Dec. 18 at Pittsburgh. The Reading meeting, which will include an inspection trip covering the Reading Co.'s locomotive and car shops, will have headquarters at the American House. In the evening a paper, "Maintenance of Locomotive and Rolling Equipment," will be read by I. A. Seiders, superintendent of motive power, Reading Co.

At the Pittsburgh meeting, in the William Penn Hotel, arc-welded structural steel buildings will be discussed by C. G. Watson, general manager Youngstown Welding Co., Youngstown, Ohio. The new shop of that company will be described in detail. The frame of this structure, measuring 80 x 200 ft., consists almost wholly of I-beams with welded brackets.

In the construction of this building no special drawings were required, nor was exact cutting asked of the mill. Extreme precision in shop preparation of the steel was not asked, standard mill tolerance being accepted. Minor differences in dimensions which developed were met either by an extra deposit of welding material in welding, or by cutting away extra material with the gas torch.

Morgan Engineering Co., Goes to Creditors' Committee, Regarded Solvent

The Morgan Engineering Co., Alliance, Ohio, has been placed in the hands of a creditors' committee, which will act for one year with the possibility of an extension of one year. The company is indebted in various amounts to creditors and, representing itself to be solvent, has deemed it possible to make full payment to creditors and stockholders providing an extension of time is given. For the purpose of gaining this extension of time an agreement was signed in Cleveland on Nov. 20, by which the creditors and stockholders agreed to accept promissory notes, payable Nov. 20, 1927, in the amount of the company's indebtedness to them. These notes shall bear interest at the rate of 6 per cent, and may be renewed at the discretion of the committee for a period not exceeding one year.

The committee, which will have complete control of the company's affairs under the agreement, is composed of the following men: H. E. Field, Wheeling, W. Va.; George S. Law, Pittsburgh; W. S. Maddox, Philadelphia; Wallace T. Perkins, New York; Charles Reyman, Akron, Ohio, and George W. Smith, Braddock, Pa.

Changes in Bethlehem Organization

The Harlan plant of the Bethlehem Shipbuilding Corporation at Wilmington, Del., which has for some time been largely engaged in the manufacture of railroad passenger coaches, will now be operated by the Bethlehem Steel Co., as will the Moore plant at Elizabeth, N. J., which, though under the management of the shipbuilding company, has been engaged largely in the manufacture of oil engines and related products. The Baltimore plant will be used for ship repair work and dry docking only. There has been very little activity recently at the Sparrows Point shipyard. As already mentioned in these columns, S. Wiley Wakeman, who has been general manager of the Fore River Works of the Bethlehem Shipbuilding Corporation at Quincy, Mass., has been made vice-president in charge of the Atlantic Coast Division, with headquarters at 25 Broadway, New York.

ENGINEERS' ANNUAL MEETING

Properties of Boiler Tubing at High Temperatures Discussed at First Session

With the presentation of more than 38 papers and reports at eight sessions, the comprehensive technical program of the forty-seventh annual meeting of the American Society of Mechanical Engineers, held at the Engineering Societies Building, New York, Dec. 6-10, got under way Tuesday, Dec. 7. Sessions were well attended and discussion was active.

Monday was devoted largely to conferences of the council and of various committees. There was a meeting of the gage steel committee, and among the several conferences held Dec. 7 was a meeting of the National Screw Thread Commission.

The eight sessions of Tuesday included the following: industrial power, wood industries, textiles, smoke abatement and railroads. There was also a session on heat transmission, held jointly with the American Society of Refrigerating Engineers, with a program arranged by a committee of the National Research Council. The Robert Henry Thurston lecture on "Recent Discoveries in the Science of Coal Utilization," by Dr. Cecil Howard Lander, director of fuels research, Department of Scientific and Industrial Research, London, was a feature of today's program.

Investigating Properties of Boiler Tubing at High Temperatures

A paper on an important subject, presented at the industrial power session, was that on the "Properties of Boiler Tubing at Elevated Temperatures Determined by Expansion Tests," by A. E. White, professor of metallurgical engineering and director of the department of engineering at the University of Michigan, and C. L. Clark, holder of the Detroit Edison fellowship in metallurgy at the same university. The paper sets forth the preliminary findings of an investigation to determine the safe working loads for 0.13 carbon-steel seamless tubing when loaded at temperatures of 900, 1000, 1250 and 1500 deg. Fahr.

Present-day boiler practice, it was pointed out, employs temperatures ranging from 550 to 750 deg. Fahr, and pressures around 350 lb. per sq. in. There is a tendency to increase both temperature and pressure, and although vast data are available as to the properties of metals at atmospheric temperatures, the engineering profession has little, if any, data upon the properties of metals at elevated temperatures. Such work as has been done has been in the nature of short-time tests, and even in this test field only a few of the possible methods and alloys have been studied.

Short Tests to Simulate Prolonged Heating

In the introductory section of the paper the efforts which have been made to develop short-time tests that would give an indication of the stability of metal under prolonged heating were referred to. On this it was said, "A number of investigators have arrived at the conclusion that metal is stable at all loads which are under the proportional limit for the temperature used, irrespective of the length of time at which the metal is held at the given temperature under the given load. The findings of the authors do not agree with this observation; at least in so far as temperatures of 1250 and 1500 deg. Fahr. are concerned. They are inclined to believe that the observation is not correct for lower temperatures, although they have not sufficient data as yet to support their contention. They are working on this phase of the problem, however, and hope to have further data within a year."

The results of the investigation are said to show that at 1500 deg. Fahr., a load of 595 lb. per sq. in. would ultimately result in failure, although the short-time test showed the metal to have a proportional limit of 1880 lb. per sq. in. Failure would be expected at a load under 595 lb. per sq. in., although no data are available on this point, except that a tube with a load of 106 lb. per sq. in. did not expand after 540 hr. at heat, although it was so badly oxidized that with continued heating it would ultimately have failed from this cause.

The short-time high-temperature tests at 1250 deg. Fahr., it was said, gave for the 0.13 carbon steel a proportional limit of 3050 lb. per sq. in. The long-time tests indicated that loads under 213 lb. per sq. in. could not be applied successfully over any long period of time, in view of the fact that a tube subjected to 213 lb. per sq. in. manifested marked expansion at the end of 483 hr. Data for 1000 and 900 deg. Fahr. are not complete.

Apparatus employed in the investigation was described and illustrated, and photomicrographs, tables and graphs were shown in outlining the results of the tests. The conclusions reached by the investigation, as stated in the paper, are as follows:

"For temperatures of 1500 and 1250 deg. Fahr., at least, the proportional limit, as ordinarily determined, was found not to be the criterion of stability. The authors are under the impression that it will not be the criterion for stability at other temperatures. These statements are made with due caution, appreciating the fact that more careful methods of obtaining proportional limits may make more justifiable the claims of those who hold that loads under the proportional limit for any given temperature may safely be used. Yet, the authors would point out that their proportional limit findings check quite closely those of other investigators whose works are recognized as of a high degree of accuracy. Therefore, it is suggested for engineering design that, until more data are available, no regard can be given to the present-day proportional-limit values for elevated temperatures, or if used, then only with an adequate factor of safety."

A Difference of Opinion

Disagreement with some of the conclusions of Messrs. White and Clark was expressed by H. J. French, senior metallurgist of the Bureau of Standards, Washington, in his discussion of the paper. Mr. French said that he was unable to accept all of the proportional limit values given by the authors of the paper, and that he was also unable to accept the implied conclusions to the effect that the authors are under the impression that the proportional limit is not a criterion of stability at any temperature between that of the room and 1500 deg. Fahr.

A system of accounting employed effectively for more than three years in seven factories was outlined in a paper on "Power Station Accounting for Industrial Plants," presented by W. R. Herod, construction engineering department, General Electric Co., Schenectady, at the same session. The paper, preprinted by the society, brought a favorable reaction, and the need of an adequate cost accounting system for industrial plants was stressed by many entering the discussion.

In a paper on "Relations of Stokers to Boilers," W. A. Shoudy, consulting engineer, New York, discussed the effect of stokers on efficiency and outlined remedies for some of the difficulties encountered at high rating.

Foremen to Name Safety Bulletin

The American Radiator Co., New York, has offered a prize of $50 to the foreman of any one of its plants who will suggest the most suitable name for a new safety bulletin which will be issued periodically to its foremen, assistant foremen and others in an executive capacity. Each month the company presents a bronze safety trophy to the plant showing the greatest improvement in accident severity over its own record in the same month during the preceding two years.

Railroads Operating with Less Fuel

Steady improvement in fuel economy is reported by the railroads. During the first nine months of 1926 the consumption of fuel was 135 lb. per 1000 gross ton-miles, including locomotive and tender. This compares with 138 lb. last year and with 152 lb. as the average for the 1921-25 period. Similarly in passenger service, the consumption in the first nine months this year was 15.7 lb. per passenger-train car-mile, against 16 lb. last year and 17.2 lb. in the five-year period.

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The Sheet-Strip Evolution

IN recent years steel strips have been available in much greater widths than were contemplated by the hoop mills of a generation ago. At several points mills to roll much wider strips—even up to 48 inches—are still being designed and built. There is a large employment of strips in what may be considered new uses, while there is also no little employment of strips where sheets were formerly used, as in automobile fenders. In the strip uses that appear new it is reasonable to assume that sheets would have been used largely if wide strips had not appeared,

The wide strip is an interesting illustration of the devious ways in which the rolling of steel develops. At one time inventors and designers had their eyes on the sheet mill as the most promising subject of improvement. The state of the art furnished no suggestion that wide, thin, material could be rolled in long lengths. The essence of sheet mill practice is the "pack," the function of which is to retain heat and distribute or diffuse irregularities in roll contour.

The "pack" as a matter of fact long antedated the rolling mill itself, as piles of sheets were hammered to make black plate for tinning, before sheets were rolled, and thus the idea of rolling a number of thicknesses at once was firmly fixed.

The proposal to establish a tin plate industry in the United States brought out many schemes for improvements in sheet mill practice, including continuous rolling. The American production of sheets at that time was relatively small, and black plate for tinning promised a doubling of the field, or more than doubling. In 1889, 1890 and 1891 imports of tin plate averaged 330,000 gross tons. The production of sheets, outside of the heaviest gages, was hardly as large. Even in 1895 the production of sheets 20 gage and lighter was only 370,579 gross tons.

None of these schemes of the early tin plate days came near succeeding. Years later, early in 1902, a quarter century ago, the United States Steel Corporation made a large appropriation for experimenting with the Bray semi-continuous sheet mill. But neither did it succeed.

The numerous projects of those early times adhered in practically all cases to the "pack," the idea of which was firmly rooted. Yet failure lay largely in the fact that the packs would not "open." The time was not ripe for such speed in rolling that heat could be retained in a single thin piece and that roll contours could be depended on, for in a general way it may be said that speed in rolling minimizes roll contour variation. Yet the sheets of those days were much narrower than the extreme widths now readily available. Even for billet and sheet bar rolling the continuous mill was just coming out. The Shenango Valley sheet bar and billet mill built in the late eighteen-nineties employed the tandem in preference to the continuous principle.

Strips now being rolled or soon to be rolled represent widths that were common to the sheets of the period in which the continuous rolling of packs was attempted. A method that was practically not thought of in the early days is succeeding and a method that many considered feasible, the tandem or continuous rolling of packs, is considered out of the question.

That the rolling of strips may really be regarded as in its infancy is suggested by the wide variety of mills now employed for the purpose. There are three-high mills and two-high mills, the latter being variously tandem, continuous and even reversing. Out of this, with the passage of time and the spending of money, will come more or less standardization, with greater widths and lighter gages.

Great Britain's Strike Losses

MINERS of the several coal districts of Great Britain had been gradually returning to work for some weeks. With the yielding of those of South Wales last week the prolonged and disastrous strike became not merely "virtually ended" but "officially ended." The miners had to give in or starve, which was not any edict of the owners but was one of stern economics. The British nation had declared that it could not support an over-manned industry as a charge upon others, and thereupon natural law took its course, undefeatable by unionism.

To Great Britain the consequences of this strike will be profound. Coming after the rout of labor in the general strike earlier in the year the death-knell has been sounded for British unionism, that heretofore has had a strangle-hold on industry in Great Britain. Will the masters of industry, now given free hand, have the wisdom and enterprise to improve their technical methods? Will the Government have the sagacity to inspire, direct, and even constrain them? If these be the next steps, and if they be taken courageously and with foresight, the strikes of 1926 will have been worth to Great Britain all that they have cost, although the bills for them are large.

However, the estimates of cost are no doubt exaggerated. The subject itself is elusive. Estimates for the coal strike range from two billion dollars (the reckoning of the Home Secretary) to about 900 millions (the reckoning of Prof. A. L. Bowley). The lower estimate is the more detailed and the more expert. In major part Professor Bowley computes loss of production. This means, of course, a diminution of the national income rather than a capital loss, although to a certain extent these come to the same thing.

If a man earning $1,000 a month falls sick for six months his income for the year may be only $6,000, instead of $12,000, but he will be poorer than at the beginning of the year only by the cost of six months' subsistence, which may be pared down to the essentials, or less. If, however, his house burns down, uninsured, he will have immediately lost its value.

The real losses of a prolonged, general labor strike are immeasurable. Labor consumes its previous savings and curtails its scale of living, and in doing the latter probably impairs health, with lasting bad consequences, which is a hidden charge. Capital suffers a more direct, but similarly intangible, loss through the impairment of plant while it is idle. Finally there is usually a loss of intangible wealth by disruption of organizations, alteration of trade channels, etc. These real losses hardly ever appear in conventional estimates.

Measuring Activity by Pig Iron

WITH so much talk about percentage rates of steel mill operation and production of steel ingots we are likely to neglect the good old standard of pig iron. For pig iron is still the basic material, and will be until something develops to take the place of finished iron and steel, or processes are so modified that there is no pig iron between the iron ore and the merchantable commodity.

On the basis of THE IRON AGE blast furnace reports to Dec. 1 it is probable that the year's pig iron total, including charcoal iron and ferroalloys, will be in the neighborhood of 39,500,000 tons.

Then we have the point that in pig iron this year falls short of 1923, with its 40,361,146 tons, and registers a gain of only about 27 or 28 per cent over the 30,966,152 tons of 1913, whereas the views entertained as to steel ingots are that we are running well ahead of 1923 and close to 60 per cent ahead of 1913.

This year's production of rolled iron and steel may be forecast at about 36,000,000 tons, and that is only 45 per cent gain over 1913. About 3 per cent less rolled steel was produced last year than there would have been had rolled steel maintained the same relationship to ingot tonnage as obtained in 1913. Demand of consumers for better steel is presumably the explanation. There was a decrease of nearly a million tons from 1913 to 1925 in production of rolled iron, or from 1,678,000 tons to 727,000 tons, indicating a substantial displacement by rolled steel.

These two points are of importance, and there is the further point that the production of neither steel castings nor iron castings has increased as has the production of rolled iron and steel. Nearly all if not all of the discrepancy between pig iron growth and steel ingot growth is accounted for in these directions.

One of the unfortunate things in common thought is the feeling that perhaps the activity in "steel" is too good to last. If we measure by pig iron we do not have so large a dose to swallow. The industrial activity betokened takes on the appearance of being easier of continuance.

Along another line but in the same connection we should not overlook the very important trend toward the use of better and better steel. When we talk of tons we are measuring what has to be transported and worked up. As the quality improves the service performed per ton increases. We are getting vastly more service out of the steel we are putting into use than in the past. The increase in service is much greater than the increase in tonnage, and that makes it so much easier for the work of the people to sustain the tonnage.

Electrolytic vs. Furnace Metal

RECENTLY announcement has been made of successful searches for ways and means to produce metal of extremest purity. Copper has been made without a microscopic trace of oxygen; zinc has been purified until the spectroscope shows nothing but zinc; aluminum has been re-refined to 99.95 per cent or more of purity; the total impurity in industrial tin has been driven down below one hundredth of one per cent.

These achievements are the more worthy of remark when we reflect that there is as yet no important commercial demand for such super-refined metals, and yet the researches have been financed in great part by such intensely practical corporations as the New Jersey Zinc Co. and the Aluminum Co. of America.

Casting about for a reasonable explanation of this situation, it may be ascribed to the unescapable conflict of two opposing factors—a demand for specialized metals of definite characteristics, and a progressive depletion of high-grade ore deposits and fuels.

A brief survey of the common metals shows that the purity of the metal drawn from a furnace generally varies directly with the ease of reduction of the oxide ores by carbon. Ranging from aluminum, which cannot be reduced in this manner at all, through iron, copper, zinc, lead, and tin, the

raw furnace product contains a constantly decreasing amount of impurity. Iron from the blast furnace has 6 per cent; tin ¼ per cent. Even in olden times the demand for a purer and better form of iron resulted in complex furnace processes to produce steel. The modern developments of such refinements are the Bessemer converter and the open-hearth furnace for mild steel and ingot iron, the Welch process for copper, and the Parkes process for lead. All of these hold a proper place and are still abundantly able to produce metal of sufficient purity for almost all commercial uses.

Every now and then, however, a demand appears which cannot successfully be met by the old methods —usually for some definite alloy or purpose wherein it is found that certain impurities must be held to a minimum in order that the properties of the resultant metal may be uniform. Thus, during the war, it was necessary to redistill best selected zinc in order to lower the impurities and meet an exacting specification for munitions.

Of more recent years a similar demand is easily met at a much lower cost by electrolytic zinc. Electrolytic copper, since thirty years, has produced metal free from iron and arsenic, two elements which have disproportionate effect on the properties of copper.

One is tempted to generalize and prophesy about electrolytic metal, having these two instances in mind—tempted until he remembers that zinc is produced electrolytically, because it is the best method of recovering zinc from complex, impure or lean ores.

Electrolytic metal, however, is the escape from two antagonistic movements; one an exhaustion of high grade ores (from which high-grade metal can be made by older methods) and the other an increasing demand for special and uniform alloys which must be compounded of metal of highest purity. It is reasonable to suppose that the present furnace methods will remain wherever good ores and fuel exist, and even lacking these, will produce the great proportion of the output which does not require high chemical purity. On the other hand, electrolytic metal is bound to grow in importance as the demand for super-refined material increases, and with increasing depletion of our good ores and fuels.

Power Plants at Mines

PROPOSALS have been made to locate electric generating plants at mouths of coal mines. The argument has been that it is cheaper to transmit power over wires than to carry the requisite amount of coal for its generation nearer points of use.

When this proposition was discussed at the recent International Coal Conference at Pittsburgh, it received scant courtesy. It was pointed out that the average large mine produces only 2000 to 4000 tons per day, an amount which would not be adequate for the large type station. Again, for dependable continuity in operation, the plant should be able to draw its fuel from a wide area. Otherwise a coal strike might easily shut off all supply of energy. Certainty and adequacy in sources of power are essential to public utility service.

One feature of the problem frequently overlooked is the enormous supply of water required for greatest economy in steam generation. For the best possible results the tonnage of water is 500 to 1000 to each ton of coal. Cooling towers or great cooling ponds at the mine plants would be essential and would add heavily to the expense of installation. And such quantities of water ordinarily are not there available.

Thus the economic aspects of the case are likely to hold the whip hand and prevent bringing the plant to the mine, except in isolated instances, where conditions are exceptionally favorable. Meanwhile the "giant power" movement is steadily gathering momentum. Wherever the plants may be, those tied together will undoubtedly be notable for economical power production, both from water falls and fuel.

CAUTION today regarding the business outlook is tinged with some pessimism. If caution persists for a while without undue pessimism, the situation may effect its own cure. The wage earners of the country give no signs of engaging in a buyers' strike and the money market seems abundantly capable of financing purchases on both capital and consumption accounts.

AMID the annual grist of forecasts for the New Year, now beginning to pour in, one that is outstanding for terseness and safeness comes from the National City Bank of New York. "The industries will enter 1927," it says, "under a strong momentum, with cautious optimism, and with absolutely no danger of a sudden breakdown."

CORRESPONDENCE

What to Do About Freight Charges

To the Editor: The business world could clip off some of the overhead burden by adopting a single standard of dealing with transportation charges. Some sell f.o.b. factory; others allow freight to destination; some show the freight allowance on the invoice, while others leave it to the customer to deduct the amount when making settlement. On account of the variety of methods it is necessary for accounting departments to watch every bill and check with contract to see who pays the freight. This takes time and costs money, and it could be eliminated if everybody sold their product f.o.b. factory. A big proportion of commodities are even now sold that way and it simplifies the clerical work wonderfully in handling that class of purchases.

For example, a bill is received for a car of material. We check and find that the shipper pays the freight. Thus we must audit the delivery feature of both bills, whereas, if there were one uniform practice of selling f.o.b. mill, it would not be necessary to examine either one. The invoice would show quantity, price, and amount. Then auditing and approval could be quickly done and the voucher issued for payment in due course. No juggling with freight deduction, and also avoiding a lot of correspondence that frequently arises over these deductions.

The adoption of the f.o.b. factory plan would save a lot of energy the extent of which saving may be imagined by considering the thousands upon thousands of counting houses that would be affected. G. M. J.

Erie, Pa.

ANTI-DUMPING ACT INVOKED

Importers of German Steel Served with Notices—Several Domestic Mills Named as Complainants

Notices of violation of the anti-dumping act have been received by several importers of German steel, from the Appraiser of the Port of New York. In one instance shipments that are claimed to be a violation, reach back to June and in another instance tonnages arriving in March of this year were included.

The notices require the importer to show cause why the anti-dumping act should not be invoked, and are apparently similar to those sent out several weeks ago to importers of pig iron in the Boston and New York districts. Complainants in this case are understood to include two of the largest domestic steel companies in addition to a producer of hoops and a producer of wire products.

New York representatives of German steel mills as well as importers who have purchased steel in Germany take a serious view of the present action, and several are of the opinion that it may result in a public hearing in which importers and domestic producers of steel will appear. Not all the importers of German steel have received this notice as yet, and apparently importers of French, Belgian and Luxemburg material are not included.

Canadian Visit of British Iron and Steel Institute

G. C. Lloyd, secretary of the Iron and Steel Institute, London, announces that the institute has been invited by the Canadian Institute of Mining and Metallurgy to hold a joint meeting with the latter at Montreal in late August, 1927. It is expected that the meeting will take place simultaneously with the holding of the Empire Mining and Metallurgical Congress for which arrangements are in progress and the opening of which is fixed for Monday, Aug. 22, at Montreal. Following the meeting the British visitors are invited to participate in a tour to Toronto, Winnipeg and Vancouver. The Canadian visit will take the place of the usual autumn meeting of the Iron and Steel Institute.

What Industrial Application of Tractors Demanded

In the beginning there was the thought that putting a set of rubber tired wheels onto a standard farm tractor would make it suitable for industrial work, said William Parrish, of the International Harvester Co., in a paper at the tractor meeting of the Society of Automotive Engineers, held in Chicago on Dec. 3. These are some of the things that were learned: It was found absolutely imperative to have a speed of over 10 miles an hour at 1000 r.p.m. Too, it was necessary to cushion the front end of the tractor through proper spring suspension, and the driver must have a comfortable seat and a platform with foot accelerator. The engine had to be protected with a suitable hood and the radiator curtained for winter weather.

Generous size hand and foot brakes became necessary; a governor that is positive and a high-tension magneto with impulse starter to insure no loss of time in getting at work in the morning; an oil-air washer that not only cleans the intake but aerates an oily mixture that flashes quickly. A muffler of generous size was demanded and the engine should be equipped with a positive oil pump. The rear axle and bearings must be of special size and designed as a load-carrying as well as a hauling unit.

Approximately 12 per cent of the total production of tractors has gone into uses other than agricultural. This industrial application of tractors is a recent activity stimulated by the desire to make such an abundance of power serve in year-round effort.

Silver Service Medals to Steel Corporation Employees in New York

Under the auspices of the Good Fellowship Club of the United States Steel Corporation's organization in New York a dinner was given at the Roosevelt Hotel Tuesday evening, Dec. 7, at which silver service medals were awarded to 37 persons in the New York offices. The recipients have been connected with the Steel Corporation or its predecessor companies for 25 years or longer, the list including Chairman Gary, President Farrell, Comptroller Filbert and Vice-President Kerr. Addresses were made by Elbert H. Gary, James A. Farrell and General Counsel Nathan L. Miller.

Similar medals have been awarded recently or are now being distributed to employees of subsidiaries of the Steel Corporation, the number of persons who have a record of 25 years' service or longer being upward of 22,000.

To Investigate Direct Steel Processes

WASHINGTON, Dec. 2.—The Bureau of Mines is now making a survey of all the work done on direct processes of making steel, seeking to determine what fundamental information is needed to develop them, as pointed out in the bureau's annual report. Gaps in the present fund of information will be filled by laboratory experiments. The bureau is particularly interested in the use of non-coking coal in the reduction of low-grade ores. Although present supplies of good iron ore and coking coal seem adequate for the immediate future, any development that would utilize non-coking coal in connection with the metalization of low-grade iron ores would make available vast quantities of dormant material a matter of national importance, it is stated.

Thermometer Testing as an Aid to Industry

In an increasing number of industrial processes, temperature regulation and measurement play an important part in controlling quantity and quality of product. This is especially true in chemical industries, where in many cases accurate regulation of temperature is necessary to secure the desired results. The Bureau of Standards tests annually thousands of thermometers of various types, thus enabling thermometer makers and users to maintain uniform and accurate temperature scales throughout the country.

A circular on thermometer testing (Bureau of Standards Circular No. 8) has been issued. It may be obtained from the Superintendent of Documents, Government Printing Office, Washington, at 10c. While intended primarily as a manual for those desiring to submit thermometers for test, this also gives information concerning thermometry in general and mercury thermometers in particular. The types of thermometers tested include in general only clinical (fever) thermometers and thermometers of the laboratory or so-called chemical type. Industrial thermometers having special mountings are not in general accepted for test.

Certificates Provided

After test a thermometer is given a certificate, providing the errors are within certain prescribed tolerances. If the errors are greater than this, the thermometer is not certified, but a report is furnished giving the corrections to be applied to the readings. The circular is concerned only with temperature measuring devices used below about 900 deg. Fahr., tests at higher temperatures being covered by other publications.

Small Gain in November Iron Output

Actual Data Show Daily Rate Only 337 Tons Larger Than October—Net Loss of 6 Furnaces—Large Ferromanganese Production

VERY little difference between the estimated pig iron output for November, collected by wire on Nov. 30, and the actual production is revealed by the returns for the month. The November output was 107,890 tons per day or only 7 tons larger than the estimated rate of 107,883 tons, published in THE IRON AGE, Dec. 2. The November daily rate is only 337 tons larger than the October rate of 107,553 tons per day.

The production of coke pig iron for the 30 days of November was 3,236,707 gross tons, or 107,890 tons per day, as compared with 3,334,132 tons, or 107,553 tons per day, for the 31 days in October. The November daily rate is the largest for any November since 1918, when it was 111,802 tons per day. It is the largest peace-time November output ever recorded. Only March, April and May have exceeded November in daily output this year. A year ago the daily rate was 97,528 tons.

There was a net loss of 6 furnaces during November, 6 having been blown in and 12 shut down. In October there was a net gain of 4 furnaces.

Capacity Active on Dec. 1

On Dec. 1 there were 213 furnaces active as compared with 219 on Nov. 1. The estimated daily capacity of the 213 furnaces blowing on the first day of this month was 105,850 tons, as contrasted with 108,760 tons per day for the 219 furnaces active on Nov. 1. Of the 6 furnaces blown in during November, 3 belonged to independent steel companies, 2 to merchant producers and one to the Steel Corporation. The 12 furnaces blown out or banked are credited as follows: 5 to the Steel Corporation, 4 to independent steel companies and 3 to merchant iron producers.

Manganese Alloy Output

The largest production of ferromanganese for the year was recorded in November at 31,903 tons. January ranks second at 29,129 tons. The 7565 tons of spiegel-

Coke Furnaces in Blast

Furnaces	Total Stacks	Dec. 1 — In Blast	Dec. 1 — Capacity per Day	Nov. 1 — In Blast	Nov. 1 — Capacity per Day
New York:					
Buffalo	21	13	5,930	13	6,115
Other N. Y. and Mass.	6	4	1,410	3	1,130
New Jersey	3	0	....	0	....
Pennsylvania:					
Lehigh Valley	12	7	3,025	6	2,695
Spiegeleisen	2	2	250	2	200
Schuylkill Valley	12	5	2,125	5	2,230
Susquehanna Valley	6	3	1,295	3	1,400
Ferromanganese	1	1	65	1	90
Lebanon Valley	4	1	220	1	215
Ferromanganese	2	0	....	0	....
Pittsburgh District	52	37	22,800	37	23,095
Ferro. and Spiegel	4	3	455	3	440
Shenango Valley	14	6	3,050	7	3,530
Western Pennsylvania	19	7	3,415	8	3,565
Ferromanganese	2	2	390	2	355
Maryland	5	5	2,560	5	2,205
Ferromanganese	1	1	85	0	....
Wheeling District	13	8	4,050	7	3,525
Ohio:					
Mahoning Valley	26	17	9,645	19	11,045
Central and Northern	23	18	10,590	20	11,580
Southern	13	6	1,660	6	1,510
Illinois and Indiana	44	30	18,310	32	19,680
Mich., Wis. and Minn.	12	7	3,025	8	3,135
Colo., Mo. and Utah	7	4	1,840	4	1,830
The South:					
Virginia	16	1	240	1	240
Ferromanganese	1	1	85	1	85
Kentucky	5	1	390	1	375
Alabama	34	22	8,645	23	8,300
Ferromanganese	1	0	....	0	....
Tennessee	12	1	295	1	190
Total	373	213	105,850	219	108,760

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant*	Total
November, 1925	77,262	23,505	100,767
December	81,552	23,301	104,853
January, 1926	83,867	23,107	106,974
February	81,148	23,260	104,408
March	85,841	26,191	111,032
April	89,236	25,768	115,004
May	86,682	25,622	112,304
June	82,186	25,658	107,844
July	79,392	24,586	103,978
August	78,216	25,025	103,241
September	81,224	23,319	104,543
October	83,188	24,365	107,553
November	82,820	25,070	107,890

*Includes pig iron made for the market by steel companies.

Production of Steel Companies for Own Use—Gross Tons

	Total Iron, Spiegel and Ferro — 1925	Total Iron, Spiegel and Ferro — 1926	Spiegeleisen and Ferromanganese* — 1925 — Fe-Mn	1925 — Spiegel	1926 — Fe-Mn	1926 — Spiegel
Jan.	2,692,537	2,599,876	23,578	5,418	29,129	7,746
Feb.	2,539,785	2,272,150	18,184	4,910	22,309	7,084
Mar.	2,812,995	2,661,092	20,062	5,449	24,064	7,339
Apr.	2,514,828	2,677,094	21,448	5,341	24,124	7,051
May	2,306,887	2,687,138	22,679	5,294	23,159	6,999
June	2,113,566	2,465,583	19,836	4,972	25,378	5,864
½ year	14,980,598	15,362,933	125,787	31,384	148,173	42,083
July	2,037,160	2,461,161	16,614	5,074	26,877	3,699
Aug.	2,124,439	2,424,687	18,867	4,939	23,557	4,372
Sept.	2,109,205	2,436,733	18,381	5,162	25,218	2,925
Oct.	2,370,382	2,578,830	21,421	5,071	28,473	6,295
Nov.	2,317,888	2,484,620	25,490	6,375	31,903	7,565
Dec.	2,528,120	.....	26,072	7,756	....	....
Year	28,467,792	.....	252,632	65,761	....	....

*Includes output of merchant furnaces.

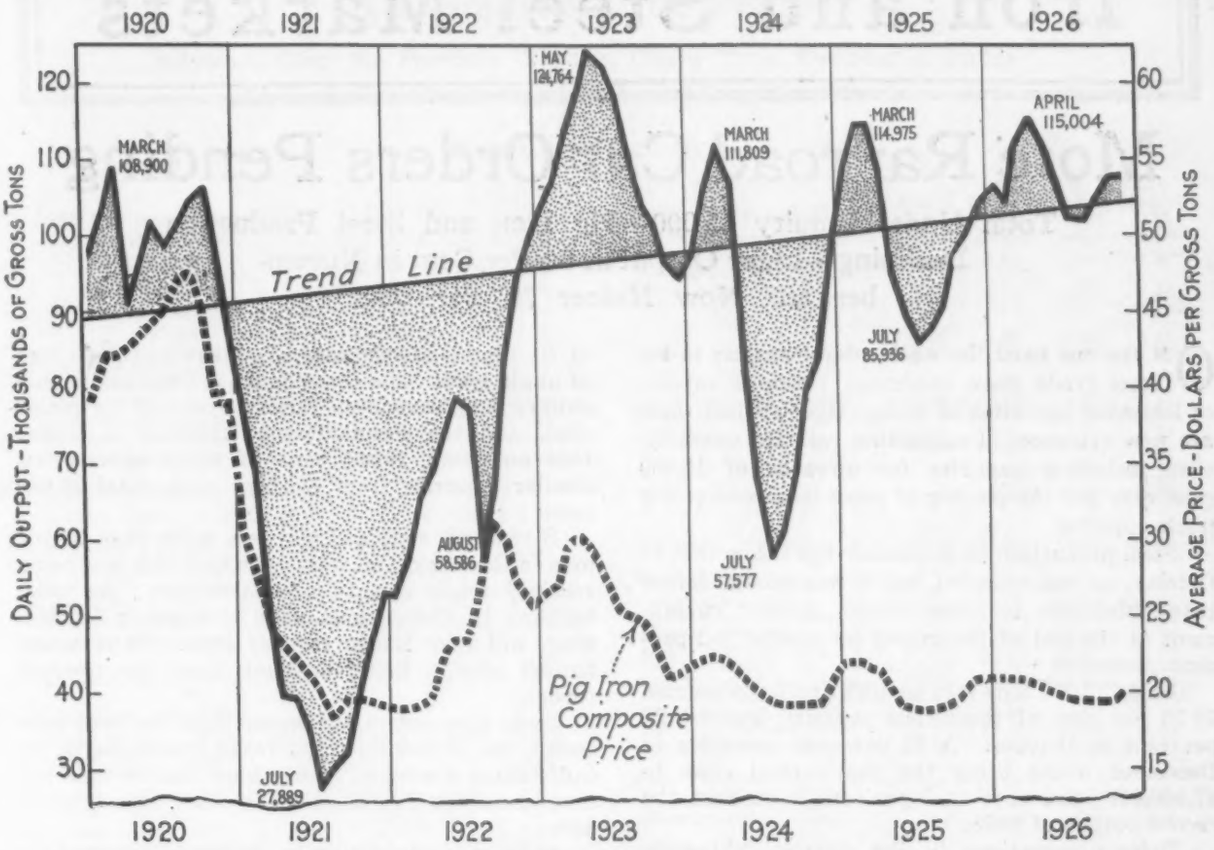
Pig Iron Production by Districts, Gross Tons

	Nov. (30 days)	Oct. (31 days)	Sept. (30 days)	Aug. (31 days)
New York and Mass.	218,657	224,631	211,362	196,706
Lehigh Valley	97,722	89,804	77,523	80,506
Schuylkill Valley	64,716	69,221	65,101	67,550
Lower Susq. and Lebanon Valleys	47,413	36,639	35,545	35,167
Pittsburgh district	682,246	728,650	688,000	668,100
Shenango Valley	93,466	109,450	96,841	108,719
Western Penna.	118,005	134,104	130,219	127,514
Maryland, Virginia and Kentucky	87,659	90,117	84,172	85,171
Wheeling district	111,166	109,241	105,391	108,429
Mahoning Valley	316,586	342,437	329,488	323,305
Central and Northern Ohio	347,547	345,124	333,951	351,852
Southern Ohio	50,757	43,843	38,082	36,071
Illinois and Indiana	568,312	602,672	576,506	644,907
Mich., Minn., Mo., Wis., Colo. and Utah	150,981	152,615	127,860	121,357
Alabama	274,604	249,584	230,345	238,812
Tennessee	6,870	6,000	5,907	6,313
Total	3,236,707	3,334,132	3,136,293	3,200,479

Production of Coke and Anthracite Pig Iron in United States By Months, Beginning Jan. 1, 1924—Gross Tons

	1924	1925	1926
Jan.	3,018,890	3,370,336	3,316,201
Feb.	3,074,757	3,214,143	2,923,415
Mar.	3,466,086	3,564,247	3,441,986
Apr.	3,233,428	3,258,958	3,450,122
May	2,615,110	2,930,807	3,481,428
June	2,026,221	2,673,457	3,235,309
½ year	17,434,492	19,011,948	19,848,461
July	1,784,899	2,664,024	3,223,338
Aug.	1,887,145	2,704,476	3,200,479
Sept.	2,053,264	2,726,198	3,136,293
Oct.	2,477,127	3,023,370	3,334,122
Nov.	2,509,673	3,023,006	3,236,707
Dec.	2,961,702	3,250,448	.....
Year*	31,108,302	36,403,470	.....

*These totals do not include charcoal pig iron. The 1925 production of this iron was 196,164 tons.



Daily Pig Iron Output in November a Little Larger Than in October; Composite Price Slightly Higher

Inclined line represents the gradually increasing theoretical needs of the country, and shows that production is slightly below the so-called normal. Dotted line represents THE IRON AGE *composite price*

eisen made last month was the second largest for the year, 7746 tons having been made in January.

Total Furnaces Increased

Serviceable blast furnaces now total 373, the new furnace of the Weirton Steel Co., Weirton, W. Va., having been blown in Nov. 21. This is the sixth new blast furnace blown in this year.

Furnaces Blown In and Out

Among the furnaces blown in during November were the Standish furnace in New York; one furnace of the Bethlehem Steel Corporation in the Lehigh Valley; one Carrie furnace of the Carnegie Steel Co. and the Clinton furnace in the Pittsburgh district; one furnace at the Maryland plant of the Bethlehem Steel Corporation in Maryland, and the new furnace of the Weirton Steel Co. in the Wheeling district.

Among the furnaces blown out or banked during November were one Duquesne furnace and one Clairton of the Carnegie Steel Co. in the Pittsburgh district; the Claire furnace in the Shenango Valley; the Punxy furnace in Western Pennsylvania; one Ohio furnace of the Carnegie Steel Co. and Grace furnace of the Youngstown Sheet & Tube Co., in the Mahoning Valley; two South Chicago furnaces of the Illinois Steel Co. in the Chicago district; the Thomas furnace in Wisconsin, and one Ensley furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama. Two River furnaces in northern Ohio were blown out Dec. 1.

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1922—Gross Tons

	1922	1923	1924	1925	1926
Jan.	53,063	104,181	97,384	108,720	106,974
Feb.	58,214	106,935	106,026	114,791	104,408
Mar.	65,675	113,673	111,809	114,975	111,032
Apr.	69,070	118,324	107,781	108,632	115,004
May	74,409	124,764	84,358	94,542	112,304
June	78,701	122,548	67,541	89,115	107,844
½ year....	66,578	115,147	95,794	105,039	109,660
July	77,592	118,656	57,577	85,936	103,978
Aug.	58,586	111,274	60,875	87,241	103,241
Sept.	67,791	104,184	68,442	90,873	104,543
Oct.	85,092	101,586	79,907	97,528	107,553
Nov.	94,990	96,476	83,656	100,767	107,890
Dec.	99,577	94,225	95,539	104,853	.....
Year	73,645	109,713	85,075	99,735	.....

Ryerson Will Expand Service at Cleveland

The steel warehouse of the Bourne-Fuller Co. at Cleveland, which has been purchased by Joseph T. Ryerson & Son, Inc., Chicago, as announced in THE IRON AGE of Dec. 2, consists of a group of buildings, with 200,000 sq. ft. of ground area. The plant is stocked with a complete line of bars, shapes, plates, sheets and other steel products, totaling about 12,000 tons in all. The Ryerson company will at once add to the facilities and increase the size and range of stock carried.

This will be the ninth Ryerson plant. The others are located at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Buffalo, Boston and New York.

Makes Mortar Mixing Boxes of Sheet Steel

As a new use of steel, mention may be made of the fact that the Commercial Shearing & Stamping Co., Youngstown, is marketing a steel "all weather" mortar mixing box, made of blue annealed sheets, of pressed steel and welded construction. During the cold weather it can be placed on a few bricks and a fire built under it to prevent the batch from freezing. It is lighter than the ordinary wooden box and eliminates the cement seepage. The box is offered in three sizes, each 10 in. deep.

Iron and Steel Markets

More Railroad Car Orders Pending

Total Under Inquiry 15,000—Pig Iron and Steel Production Declining—Ingot Output at 80 Per Cent in November and Now Nearer 70 Per Cent

ON the one hand the week's developments in the steel trade have confirmed previous reports of lessening operation of mills. Over against these are new evidences of expanding railroad consumption, including inquiries for upwards of 15,000 steel cars and the placing of some large orders for track supplies.

Steel production in November fell below that of October, as was expected, but it was enough larger than shipments to cause rather marked curtailment at the end of the month by several independent producers.

At 3,722,000 tons last month's total represented 79.73 per cent of theoretical capacity, against 88 per cent in October. A 70 per cent operation in December would bring the year's total close to 47,000,000 tons, or 6 to 7 per cent more than the record output of 1925.

Today's operations in the district taking in Pittsburgh, Youngstown, Wheeling, Johnstown, Pa., and intermediate points are somewhat under 70 per cent, and indications are that this will be lowered later in the month.

The Steel Corporation is on a 75 or 76 per cent basis this week and in view of November railroad buying, its Dec. 10 statement of unfilled orders will probably show little or no decrease.

While pig iron production in November showed a slight increase, it went off toward the end of the month, six fewer furnaces being in blast on Dec. 1 than on Nov. 1—213 against 219. Due to further steel works curtailment in the past week, five more blast furnaces have gone out—one each of the Carnegie Steel Co., Jones & Laughlin Steel Corporation, Pittsburgh Steel Co., Youngstown Sheet & Tube Co., and Republic Iron & Steel Co.

It would appear that shipments of steel in October and November were larger than were warranted by the operations of consumers, a number of mills accepting increased fourth quarter orders at 1.90c. for bars and shapes before the advance to 2c. Thus inventory absorption rather than further steel supply is the present concern of buyers.

Under these conditions the appearance of new railroad business is timely. The week's equipment inquiries include 9000 cars, which with those pending bring the total about to be bid on to more than 15,000. The Missouri Pacific is out for 3220, the Baltimore & Ohio for 3000, the Santa Fe for 1800 and the Western Maryland for 1200. Inquiries of the Rock Island for 2500, the Norfolk & Western for 2000 and the Lehigh Valley for 1200 were reported recently. Locomotive inquiry is active with 50 wanted by the Santa Fe, 35 by the Rock Island and 20 by the Grand Trunk. The Illinois Central's budget provides for more than 9000 cars, which may soon be inquired for.

In track supplies heavy buying by the New York Central is noteworthy, including 15,000 tons of tie plates, 20,000 kegs of spikes and 2500 tons of angle bars. The Chesapeake & Ohio and a subsidiary line have been large buyers of tie plates also, and the Pennsylvania Railroad is taking bids on about 10,000 tons of track accessories. Similar inquiries from Western roads total 35,000 tons.

Structural steel awards were more than 35,000 tons in the week, and work on which bids are being received totals upward of 36,000 tons. An office building in Philadelphia, soon to come up for bidding, will take 12,000 tons of steel. Thus actual figures give a better account than the common report.

Some pipe orders are larger than has been estimated, the oil line from the Texas Panhandle to the Gulf taking a total of 85,000 tons; yet they do not compensate for the falling off in other tubular products.

Increased competition in sheets is indicated by the shading of 3c. on No. 24 black and by 2.30c. and less on blue annealed. In plates, shapes and bars, however, the market shows general steadiness.

Few of the large consumers of tin plate have placed formal contracts for the first half of 1927, but their needs are fairly well known. Capacity is ample in the way shipments are now spread over the year and with the new mills completed in Chicago. Thus users feel no concern over supplies.

The pig iron market shows more iron available from steel company furnaces, now that steel output is falling. In New England prices are weaker and in all districts demand is light, consumers being encouraged to delay purchases in view of the slump in coal and coke prices.

Greater activity in the ferromanganese market is evidenced by sales of 30,000 tons or more by one domestic producer. The contracts carry protection against a decline in price, this feature being a carry-over from the well-remembered competition in this market a year ago.

New York importers of German steel products have been notified of new proceedings under the anti-dumping act, complaints having just been entered by a number of domestic companies.

Steel importation is affected by an increase of 50c. a ton in ocean freights, which partly offsets late reductions in Continental prices, and by an effort to increase the charges for inspection of the steel.

Improvement in Germany, where an 80 per cent operation in steel is continued for December, is shown by a heavy demand for special machines for the automobile industry.

The pig iron composite price has declined in the week from $20.13 to $20.04, which is $1.75 below the level of one year ago.

Finished steel remains for the ninth week at 2.453c. per lb., exactly where it was a year ago. In the interim it has been no higher, but was down to 2.403c. in May.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Dec. 7, 1926	Nov. 30, 1926	Nov. 9, 1926	Dec. 8, 1925
No. 2, fdy., Philadelphia	$23.26	$23.26	$23.26	$23.76
No. 2, Valley furnace	19.00	19.00	19.00	20.50
No. 2, Southern, Cin'ti	23.69	23.69	23.69	25.69
No. 2, Birmingham	20.00	20.00	20.00	22.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	23.00
Basic, del'd eastern Pa	*22.00*	22.50	23.00	23.00
Basic, Valley furnace	18.50	18.50	18.50	20.00
Valley Bessemer, del'd P'gh	21.76	21.76	21.76	22.76
Malleable, Chicago*	21.00	21.00	21.00	23.00
Malleable, Valley	19.00	19.00	19.00	20.50
Gray forge, Pittsburgh	20.26	20.26	20.26	21.76
L. S. charcoal, Chicago	27.04	27.04	27.04	29.04
Ferromanganese, furnace	100.00	100.00	95.00	115.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	36.00	36.00	36.00	36.96
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh	36.00	36.00	36.00	36.00
Forging billets, P'gh	40.00	40.00	40.00	40.00
O.-h. billets, Phila	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	1.90	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.22
Iron bars, Chicago	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh	2.00	2.00	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh	1.90	1.90	1.90	1.90
Tank plates, Chicago	2.10	2.10	2.10	2.10
Tank plates, New York	2.24	2.24	2.24	2.04
Beams, Pittsburgh	2.00	2.00	2.00	1.90
Beams, Chicago	2.10	2.10	2.10	2.10
Beams, New York	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Sheets, Nails and Wire,	Dec. 7, 1926	Nov. 30, 1926	Nov. 9, 1926	Dec. 8, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	3.20
Sheets, black, No. 24, Chicago dist. mill	3.20	3.20	3.20	3.30
Sheets, galv., No. 24, P'gh	3.85	3.85	3.85	4.15
Sheets, galv., No. 24, Chicago dist. mill	4.05	4.05	4.05	4.25
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.50
Sheets, blue, 9 & 10, Chicago dist. mill	2.50	2.50	2.50	2.60
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.35
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$14.50	$14.50	$14.50	$18.50
Carwheels, Philadelphia	16.50	16.50	16.50	18.50
Heavy melting steel, P'gh	17.00	17.00	17.50	19.00
Heavy melting steel, Phila.	15.50	15.50	15.50	17.50
Heavy melting steel, Ch'go	13.00	13.00	13.00	15.75
No. 1 cast, Pittsburgh	16.00	16.00	16.50	18.00
No. 1 cast, Philadelphia	17.00	17.00	17.50	18.00
No. 1 cast, Ch'go (net ton)	16.00	16.00	16.00	17.25
No. 1 RR. wrot., Phila	17.00	17.00	17.00	18.50
No. 1 RR. wrot., Ch'go (net)	*12.00*	12.50	12.50	14.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$3.50*	$3.90	$4.75	$3.50
Foundry coke, prompt	*4.50*	5.00	6.00	4.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.75	13.75	14.12½	14.25
Electrolytic copper, refinery	13.37½	13.37½	13.62½	13.87½
Zinc, St. Louis	*7.00*	7.15	7.20	8.75
Zinc, New York	*7.35*	7.50	7.55	9.00
Lead, St. Louis	*7.65*	7.80	7.80	9.00
Lead, New York	*7.90*	8.00	8.00	9.25
Tin (Straits), New York	*69.50*	71.75	70.75	63.50
Antimony (Asiatic), N. Y.	*13.75*	14.00	13.25	20.25

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

December May Prove Low Month of Year in Steel Output—Pipe Line to Take 85,000 Tons

PITTSBURGH, Dec. 7.—Steel ingot production is still slipping in this and nearby districts, and the experiences of the first full week of December have dampened recent expectations that the latter part of the month would bring on better business in preparation for early 1927 requirements. In point of steel output and mill engagement, it now is generally believed that December will prove the low month of the year. Five fewer steel works blast furnaces are making iron now than at the end of November, the Jones & Laughlin Steel Corporation, the Carnegie Steel Co., the Pittsburgh Steel Co., the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co. each having taken off a furnace. Ingot production has dipped below 70 per cent of capacity, with Youngstown producing at the rate of 60 per cent, Pittsburgh at 70 per cent, the Wheeling district at about 80 per cent and Johnstown at about 60 per cent. Based upon capacity, that means an average of 68 per cent for the entire area.

The decline in steel production, according to competent observers, has been even more rapid than that in consumption, and it is not hard to accept that conclusion in view of the fact that in October and November production and shipments of steel were on a heavier scale than seemed warranted by the reported activities of consuming industries. It has been recently disclosed that, besides accepting specifications at the end of the third quarter for unshipped tonnages of the heavy tonnage products, a number of mills permitted buyers to increase their orders before 1.90c. disappeared as a price for bars and shapes. There was insistence by the mills that buyers take out the tonnages; as a result, consumers became well enough supplied to be freed from the necessity of additional purchases of consequence, and order books dwindled. There are probably heavier inventories in these lines than generally supposed, and inventory absorption rather than new supplies now concerns the big consumers.

The decline in automobile production in the past two months brought a loss of steel consumption that was not made good by increases in other directions. Then there has been the drop in the demand for fabricated steel, and a gain in the orders for line pipe has hardly compensated for the loss of business in other tubular goods. The general situation suggests that the steel industry is still gaited to take care of a year's requirements in less than 12 months.

The surprising feature of the market is that prices are holding as well as they are in face of the slump in activity. There is increased price competition in sheets, and the market is no more settled in cold-rolled strips than it has been during the past three or four months. In other products, however, the market reflects a good measure of selling restraint and price steadiness.

The slump in coal and coke prices continues, and with it there is increased talk of the necessity of canceling the Nov. 1 wage advance, if these products are to be marketed profitably at the prices that buyers seem willing to pay. Furnace coke is now as low as

$3.50 per net ton at ovens, or just about where it was before the British miners' strike became a dominant factor in prices and wages. With the possibility that wages will come down and that coke will drop in keeping with that development, pig iron consumers are encouraged to delay purchases in the belief that without the coke cost argument producers cannot maintain their present prices.

Pig Iron.—The market is even duller than it has been, if that is possible, and 1000 tons is probably a liberal estimate of the past week's sales by merchant producers in this district. Shipments are large enough, but new demands are from the car-lot buyers, and their purchases have not been numerous in the past week. Little interest is shown in first quarter supplies by the important melters, and until there is some relief through low contract coke prices, the producers are not disposed to force the issue. In a sentence, buyers and producers are marking time. Basic iron does not appear salable at more than $18.50, and Bessemer at more than $20, Valley furnace. While there are sales of malleable and No. 2 foundry at $20, there are sellers of these grades at $19. W. P. Snyder & Co. make the average price of Bessemer iron from Valley furnaces in November $19.94, against $19 in October, and of basic $18.50, against $18 the month before.

We quote Valley furnace, the freight for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.50
Bessemer	20.00
Gray forge	18.50 to 19.50
No. 2 foundry	19.00 to 20.00
No. 3 foundry	18.50 to 19.50
Malleable	19.00 to 20.00
Low phosphorus, copper free	28.00

Hot-Rolled Flats.—A fair amount of first quarter business has been booked, but specifications are not yet coming in at all freely, and current demands are light. Prices are holding well at 2.30c., base Pittsburgh, for wide, and 2.50c., base, for narrow material.

Cold-Rolled Strips.—There is still delay on the part of a number of producers about opening books or naming a first quarter price, because the urge to do so is lacking. Not a few of the large users have prepared for their January requirements in releases against suspended shipments and small new purchases made recently. Prices are still very uncertain on lots of a carload or more. On less-than-carload lots 3.40c. to 3.50c., base Pittsburgh, is still being done, but for larger lots 3.20c. is the maximum and prices as low as 3.10c. are heard of.

Semi-Finished Steel.—Business in billets, slabs and sheet bars is entirely in keeping with the operations of finishing mills, which are low on account of a slow market in strips and sheets. There is not much interest in requirements for the first quarter, but in seeking business for that period producers are naming present prices of $36, Pittsburgh or Youngstown, for sheet bars, small billets and slabs and $35 for large billets and slabs. With little likelihood of higher prices, buyers seem disposed to give up buying by quarterly periods in favor of monthly purchases. Such a course keeps makers from getting very heavily committed and consumers from becoming oversupplied, with the result that price fluctuations are restricted. A year ago, when prices were advancing, considerable first quarter contracting was done and makers became well filled up, but this year it is impossible to induce buyers to cover much ahead of real needs. Specifications for wire rods and skelp are lighter, as wire products are selling slowly and the market is very quiet on the buttwelded sizes of pipe.

Steel and Iron Bars.—Steel bars are slow, but prices are holding. There has been a considerable curtailment of mill operations, and some small-lot buyers, finding that they cannot get quite as quick deliveries, are paying full mill quotations to escape going to the warehouses. Small-lot sales at 2.10c., base, are a little more frequent than they were a few weeks ago, when the mills, to maintain schedules, were willing to take small lots at 2c. Large consumers of bars are not taking out any more tonnage this month than they did last month, which was a very quiet one for makers of cold-finished steel bars and manufacturers of bolts, nuts and rivets. Iron bars are dull and easy.

Structural Steel.—Steel fabricating companies are figuring on a good deal of business, but still find lettings small and unequal to completed orders. This immediate district is not producing much business, but other parts of the country with the exception of the South seem to have a good deal of building planned for the early part of the new year. There is disappointment over the failure of Southern business to develop, as it was counted on to tide over the slack period in Northern construction activities. Structural mill operations are decreasing, but the mills are still making a firm stand at 2c., base Pittsburgh, for large structural shapes, and there is no evidence that less is being done on the business that is coming out.

Plates.—The market is firm at 1.90c., base Pittsburgh. While the country as a whole has more plate-making capacity than is needed, a good deal of it cannot be operated profitably at present prices and is being allowed to stand idle. With 20,000 railroad cars in the market, the prospect for a good market in plates has brightened. Winter operation of plate mills should be helped also by line-pipe business. The oil line to run from the Texas Panhandle to the Gulf of Mexico will take a total of 85,000 tons, as in addition to 500 miles of 10-in. pipe there will be 300 miles of 12-in.

Wire Products.—The recent spurt of orders has been followed by buying on a lighter scale, in strict accord with actual needs, which, as usual at this time of year, are small. As there are no signs of higher prices, buyers are not much concerned about their requirements for the early months of next year. Prices are steady in all markets, because there is not an engagement of productive capacity that would produce an oversupply.

Rails and Track Supplies.—It is reported that Carnegie Steel Co. will furnish 20,000 tons of standard-section rails for the Gregg Valley connection between the Chesapeake & Ohio and Hocking Valley railroads in Ohio. Light-section rails are no longer much in de-

THE IRON AGE Composite Prices

Finished Steel

Dec. 7, 1926, 2.453c. Per Lb.

One week ago	2.453c.
One month ago	2.453c.
One year ago	2.453c.
10-year pre-war average	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.403c.,	May 18
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

Dec. 7, 1926, $20.04 Per Gross Ton

One week ago	$20.13
One month ago	20.21
One year ago	21.79
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$19.46,	July 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c.
Del'd Cleveland	2.19c.
F.o.b. Cleveland, sizes up to 1-in. rounds	2.00c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c. to 2.10c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	1.90c. to 2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.15c. to 2.25c.
Del'd Cleveland	2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago,	2.50c. to 2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.30c. to 2.40c.
Bars, f.o.b. Chicago	2.40c.
Bars, Cleveland	2.45c.
Shafting, ground, f.o.b. mill	*2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.10c. to 3.50c.
Strips, f.o.b. Cleveland mills	3.00c. to 3.40c.
Strips, delivered Chicago	3.40c. to 3.70c.
Strips, f.o.b. Worcester mills	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1-in.	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

Base to Retailers	Per Net Ton
F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.30c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill	2.50c.
Nos. 9 and 10, del'd Philadelphia	2.62c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh	2.90c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill	3.20c.
No. 24, del'd Philadelphia	3.22c. to 3.32c.
No. 24, f.o.b. Birmingham	3.30c. to 3.40c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade	4.25c.
No. 24, f.o.b. Pittsburgh, B grade	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill	4.05c.
No. 24, del'd Philadelphia	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham	4.20c. to 4.30c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill	3.25c. to 3.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.25c.

Long Ternes

No. 24, 8-lb. coating, f.o.b. mill	4.30c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers	Base Per 100 Lb.
2100*	(1¼% Nickel, 0.10% to 0.20% Carbon) $3.20 to $3.25
2300	(3½% Nickel) 4.35 to 4.50
2500	(5% Nickel) 5.50 to 5.65
3100	(Nickel Chromium) 3.40 to 3.50
3200	(Nickel Chromium) 5.00 to 5.25
3300	(Nickel Chromium) 7.00 to 7.25
3400	(Nickel Chromium) 6.25 to 6.50
5100	(Chromium Steel) 3.40 to 3.50
5200*	(Chromium Steel) 7.00 to 7.50
6100	(Chrom. Vanadium bars) 4.30
6100	(Chrom. Vanad. spring steel) 3.80
9250	(Silicon Manganese spring steel) 3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.) 4.10 to 4.20
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.) 4.30
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.) 4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.) 3.40 to 3.50
	Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum) 4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	36.00
Light (from rail steel), f.o.b. mill	34.00
Light (from billets), f.o.b. Ch'go mill	$36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.00
Spikes, ½ in. and smaller	2.90 to 3.25
Spikes, boat and barge	3.25
Track bolts, all sizes	3.90 to 4.50
Tie plates, steel	2.35
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	12
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	12
¾	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ to 1½ in.	52	3¼ to 3½ in.	47
1¾ in.	36	4 in.	50
2 to 2¼ in.	31	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

Iron and Steel Markets

More Railroad Car Orders Pending

Total Under Inquiry 15,000—Pig Iron and Steel Production Declining—Ingot Output at 80 Per Cent in November and Now Nearer 70 Per Cent

ON the one hand the week's developments in the steel trade have confirmed previous reports of lessening operation of mills. Over against these are new evidences of expanding railroad consumption, including inquiries for upwards of 15,000 steel cars and the placing of some large orders for track supplies.

Steel production in November fell below that of October, as was expected, but it was enough larger than shipments to cause rather marked curtailment at the end of the month by several independent producers.

At 3,722,000 tons last month's total represented 79.73 per cent of theoretical capacity, against 88 per cent in October. A 70 per cent operation in December would bring the year's total close to 47,000,000 tons, or 6 to 7 per cent more than the record output of 1925.

Today's operations in the district taking in Pittsburgh, Youngstown, Wheeling, Johnstown, Pa., and intermediate points are somewhat under 70 per cent, and indications are that this will be lowered later in the month.

The Steel Corporation is on a 75 or 76 per cent basis this week and in view of November railroad buying, its Dec. 10 statement of unfilled orders will probably show little or no decrease.

While pig iron production in November showed a slight increase, it went off toward the end of the month, six fewer furnaces being in blast on Dec. 1 than on Nov. 1—213 against 219. Due to further steel works curtailment in the past week, five more blast furnaces have gone out—one each of the Carnegie Steel Co., Jones & Laughlin Steel Corporation, Pittsburgh Steel Co., Youngstown Sheet & Tube Co., and Republic Iron & Steel Co.

It would appear that shipments of steel in October and November were larger than were warranted by the operations of consumers, a number of mills accepting increased fourth quarter orders at 1.90c. for bars and shapes before the advance to 2c. Thus inventory absorption rather than further steel supply is the present concern of buyers.

Under these conditions the appearance of new railroad business is timely. The week's equipment inquiries include 9000 cars, which with those pending bring the total about to be bid on to more than 15,000. The Missouri Pacific is out for 3220, the Baltimore & Ohio for 3000, the Santa Fe for 1800 and the Western Maryland for 1200. Inquiries of the Rock Island for 2500, the Norfolk & Western for 2000 and the Lehigh Valley for 1200 were reported recently. Locomotive inquiry is active with 50 wanted by the Santa Fe, 35 by the Rock Island and 20 by the Grand Trunk. The Illinois Central's budget provides for more than 9000 cars, which may soon be inquired for.

In track supplies heavy buying by the New York Central is noteworthy, including 15,000 tons of tie plates, 20,000 kegs of spikes and 2500 tons of angle bars. The Chesapeake & Ohio and a subsidiary line have been large buyers of tie plates also, and the Pennsylvania Railroad is taking bids on about 10,000 tons of track accessories. Similar inquiries from Western roads total 35,000 tons.

Structural steel awards were more than 35,000 tons in the week, and work on which bids are being received totals upward of 36,000 tons. An office building in Philadelphia, soon to come up for bidding, will take 12,000 tons of steel. Thus actual figures give a better account than the common report.

Some pipe orders are larger than has been estimated, the oil line from the Texas Panhandle to the Gulf taking a total of 85,000 tons; yet they do not compensate for the falling off in other tubular products.

Increased competition in sheets is indicated by the shading of 3c. on No. 24 black and by 2.30c. and less on blue annealed. In plates, shapes and bars, however, the market shows general steadiness.

Few of the large consumers of tin plate have placed formal contracts for the first half of 1927, but their needs are fairly well known. Capacity is ample in the way shipments are now spread over the year and with the new mills completed in Chicago. Thus users feel no concern over supplies.

The pig iron market shows more iron available from steel company furnaces, now that steel output is falling. In New England prices are weaker and in all districts demand is light, consumers being encouraged to delay purchases in view of the slump in coal and coke prices.

Greater activity in the ferromanganese market is evidenced by sales of 30,000 tons or more by one domestic producer. The contracts carry protection against a decline in price, this feature being a carry-over from the well-remembered competition in this market a year ago.

New York importers of German steel products have been notified of new proceedings under the anti-dumping act, complaints having just been entered by a number of domestic companies.

Steel importation is affected by an increase of 50c. a ton in ocean freights, which partly offsets late reductions in Continental prices, and by an effort to increase the charges for inspection of the steel.

Improvement in Germany, where an 80 per cent operation in steel is continued for December, is shown by a heavy demand for special machines for the automobile industry.

The pig iron composite price has declined in the week from $20.13 to $20.04, which is $1.75 below the level of one year ago.

Finished steel remains for the ninth week at 2.453c. per lb., exactly where it was a year ago. In the interim it has been no higher, but was down to 2.403c. in May.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Dec. 7, 1926	Nov. 30, 1926	Nov. 9, 1926	Dec. 8, 1925
No. 2, fdy., Philadelphia	$23.26	$23.26	$23.26	$23.76
No. 2, Valley furnace	19.00	19.00	19.00	20.50
No. 2, Southern, Cin'ti	23.69	23.69	23.69	25.69
No. 2, Birmingham	20.00	20.00	20.00	22.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	23.00
Basic, del'd eastern Pa	*22.00*	22.50	23.00	23.00
Basic, Valley furnace	18.50	18.50	18.50	20.00
Valley Bessemer, del'd P'gh	21.76	21.76	21.76	22.76
Malleable, Chicago*	21.00	21.00	21.00	23.00
Malleable, Valley	19.00	19.00	19.00	20.50
Gray forge, Pittsburgh	20.26	20.26	20.26	21.76
L. S. charcoal, Chicago	27.04	27.04	27.04	29.04
Ferromanganese, furnace	100.00	100.00	95.00	115.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	36.00	36.00	36.00	36.96
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh	36.00	36.00	36.00	36.00
Forging billets, P'gh	40.00	40.00	40.00	40.00
O.-h. billets, Phila	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	1.90	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.22
Iron bars, Chicago	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh	2.00	2.00	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh	1.90	1.90	1.90	1.90
Tank plates, Chicago	2.10	2.10	2.10	2.10
Tank plates, New York	2.24	2.24	2.24	2.04
Beams, Pittsburgh	2.00	2.00	2.00	1.90
Beams, Chicago	2.10	2.10	2.10	2.10
Beams, New York	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Sheets, Nails and Wire,	Dec. 7, 1926	Nov. 30, 1926	Nov. 9, 1926	Dec. 8, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	3.20
Sheets, black, No. 24, Chicago dist. mill	3.20	3.20	3.20	3.30
Sheets, galv., No. 24, P'gh	3.85	3.85	3.85	4.15
Sheets, galv., No. 24, Chicago dist. mill	4.05	4.05	4.05	4.25
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.50
Sheets, blue, 9 & 10, Chicago dist. mill	2.50	2.50	2.50	2.60
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.35
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$14.50	$14.50	$14.50	$18.50
Carwheels, Philadelphia	16.50	16.50	16.50	18.50
Heavy melting steel, P'gh	17.00	17.00	17.50	19.00
Heavy melting steel, Phila.	15.50	15.50	15.50	17.50
Heavy melting steel, Ch'go	13.00	13.00	13.00	15.75
No. 1 cast, Pittsburgh	16.00	16.00	16.50	18.00
No. 1 cast, Philadelphia	17.00	17.00	17.50	18.00
No. 1 cast, Ch'go (net ton)	16.00	16.00	16.00	17.25
No. 1 RR. wrot., Phila.	17.00	17.00	17.00	18.50
No. 1 RR. wrot., Ch'go (net)	*12.00*	12.50	12.50	14.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$3.50*	$3.90	$4.75	$3.50
Foundry coke, prompt	*4.50*	5.00	6.00	4.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.75	13.75	14.12½	14.25
Electrolytic copper, refinery	13.37½	13.37½	13.62½	13.87½
Zinc, St. Louis	*7.00*	7.15	7.20	8.75
Zinc, New York	*7.35*	7.50	7.55	9.00
Lead, St. Louis	*7.65*	7.80	7.80	9.00
Lead, New York	*7.90*	8.00	8.00	9.25
Tin (Straits), New York	*69.50*	71.75	70.75	63.50
Antimony (Asiatic), N. Y.	*13.75*	14.00	13.25	20.25

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

December May Prove Low Month of Year in Steel Output—Pipe Line to Take 85,000 Tons

PITTSBURGH, Dec. 7.—Steel ingot production is still slipping in this and nearby districts, and the experiences of the first full week of December have dampened recent expectations that the latter part of the month would bring on better business in preparation for early 1927 requirements. In point of steel output and mill engagement, it now is generally believed that December will prove the low month of the year. Five fewer steel works blast furnaces are making iron now than at the end of November, the Jones & Laughlin Steel Corporation, the Carnegie Steel Co., the Pittsburgh Steel Co., the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co. each having taken off a furnace. Ingot production has dipped below 70 per cent of capacity, with Youngstown producing at the rate of 60 per cent, Pittsburgh at 70 per cent, the Wheeling district at about 80 per cent and Johnstown at about 60 per cent. Based upon capacity, that means an average of 68 per cent for the entire area.

The decline in steel production, according to competent observers, has been even more rapid than that in consumption, and it is not hard to accept that conclusion in view of the fact that in October and November production and shipments of steel were on a heavier scale than seemed warranted by the reported activities of consuming industries. It has been recently disclosed that, besides accepting specifications at the end of the third quarter for unshipped tonnages of the heavy tonnage products, a number of mills permitted buyers to increase their orders before 1.90c. disappeared as a price for bars and shapes. There was insistence by the mills that buyers take out the tonnages; as a result, consumers became well enough supplied to be freed from the necessity of additional purchases of consequence, and order books dwindled. There are probably heavier inventories in these lines than generally supposed, and inventory absorption rather than new supplies now concerns the big consumers.

The decline in automobile production in the past two months brought a loss of steel consumption that was not made good by increases in other directions. Then there has been the drop in the demand for fabricated steel, and a gain in the orders for line pipe has hardly compensated for the loss of business in other tubular goods. The general situation suggests that the steel industry is still gaited to take care of a year's requirements in less than 12 months.

The surprising feature of the market is that prices are holding as well as they are in face of the slump in activity. There is increased price competition in sheets, and the market is no more settled in cold-rolled strips than it has been during the past three or four months. In other products, however, the market reflects a good measure of selling restraint and price steadiness.

The slump in coal and coke prices continues, and with it there is increased talk of the necessity of canceling the Nov. 1 wage advance, if these products are to be marketed profitably at the prices that buyers seem willing to pay. Furnace coke is now as low as

$3.50 per net ton at ovens, or just about where it was before the British miners' strike became a dominant factor in prices and wages. With the possibility that wages will come down and that coke will drop in keeping with that development, pig iron consumers are encouraged to delay purchases in the belief that without the coke cost argument producers cannot maintain their present prices.

Pig Iron.—The market is even duller than it has been, if that is possible, and 1000 tons is probably a liberal estimate of the past week's sales by merchant producers in this district. Shipments are large enough, but new demands are from the car-lot buyers, and their purchases have not been numerous in the past week. Little interest is shown in first quarter supplies by the important melters, and until there is some relief through low contract coke prices, the producers are not disposed to force the issue. In a sentence, buyers and producers are marking time. Basic iron does not appear salable at more than $18.50, and Bessemer at more than $20, Valley furnace. While there are sales of malleable and No. 2 foundry at $20, there are sellers of these grades at $19. W. P. Snyder & Co. make the average price of Bessemer iron from Valley furnaces in November $19.94, against $19 in October, and of basic $18.50, against $18 the month before.

We quote Valley furnace, the freight for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.50
Bessemer	20.00
Gray forge	18.50 to 19.50
No. 2 foundry	19.00 to 20.00
No. 3 foundry	18.50 to 19.50
Malleable	19.00 to 20.00
Low phosphorus, copper free	28.00

Hot-Rolled Flats.—A fair amount of first quarter business has been booked, but specifications are not yet coming in at all freely, and current demands are light. Prices are holding well at 2.30c., base Pittsburgh, for wide, and 2.50c., base, for narrow material.

Cold-Rolled Strips.—There is still delay on the part of a number of producers about opening books or naming a first quarter price, because the urge to do so is lacking. Not a few of the large users have prepared for their January requirements in releases against suspended shipments and small new purchases made recently. Prices are still very uncertain on lots of a carload or more. On less-than-carload lots 3.40c. to 3.50c., base Pittsburgh, is still being done, but for larger lots 3.20c. is the maximum and prices as low as 3.10c. are heard of.

Semi-Finished Steel.—Business in billets, slabs and sheet bars is entirely in keeping with the operations of finishing mills, which are low on account of a slow market in strips and sheets. There is not much interest in requirements for the first quarter, but in seeking business for that period producers are naming present prices of $36, Pittsburgh or Youngstown, for sheet bars, small billets and slabs and $35 for large billets and slabs. With little likelihood of higher prices, buyers seem disposed to give up buying by quarterly periods in favor of monthly purchases. Such a course keeps makers from getting very heavily committed and consumers from becoming oversupplied, with the result that price fluctuations are restricted. A year ago, when prices were advancing, considerable first quarter contracting was done and makers became well filled up, but this year it is impossible to induce buyers to cover much ahead of real needs. Specifications for wire rods and skelp are lighter, as wire products are selling slowly and the market is very quiet on the buttwelded sizes of pipe.

Steel and Iron Bars.—Steel bars are slow, but prices are holding. There has been a considerable curtailment of mill operations, and some small-lot buyers, finding that they cannot get quite as quick deliveries, are paying full mill quotations to escape going to the warehouses. Small-lot sales at 2.10c., base, are a little more frequent than they were a few weeks ago, when the mills, to maintain schedules, were willing to take small lots at 2c. Large consumers of bars are not taking out any more tonnage this month than they did last month, which was a very quiet one for makers of cold-finished steel bars and manufacturers of bolts, nuts and rivets. Iron bars are dull and easy.

Structural Steel.—Steel fabricating companies are figuring on a good deal of business, but still find lettings small and unequal to completed orders. This immediate district is not producing much business, but other parts of the country with the exception of the South seem to have a good deal of building planned for the early part of the new year. There is disappointment over the failure of Southern business to develop, as it was counted on to tide over the slack period in Northern construction activities. Structural mill operations are decreasing, but the mills are still making a firm stand at 2c., base Pittsburgh, for large structural shapes, and there is no evidence that less is being done on the business that is coming out.

Plates.—The market is firm at 1.90c., base Pittsburgh. While the country as a whole has more plate-making capacity than is needed, a good deal of it cannot be operated profitably at present prices and is being allowed to stand idle. With 20,000 railroad cars in the market, the prospect for a good market in plates has brightened. Winter operation of plate mills should be helped also by line-pipe business. The oil line to run from the Texas Panhandle to the Gulf of Mexico will take a total of 85,000 tons, as in addition to 500 miles of 10-in. pipe there will be 300 miles of 12-in.

Wire Products.—The recent spurt of orders has been followed by buying on a lighter scale, in strict accord with actual needs, which, as usual at this time of year, are small. As there are no signs of higher prices, buyers are not much concerned about their requirements for the early months of next year. Prices are steady in all markets, because there is not an engagement of productive capacity that would produce an oversupply.

Rails and Track Supplies.—It is reported that Carnegie Steel Co. will furnish 20,000 tons of standard-section rails for the Gregg Valley connection between the Chesapeake & Ohio and Hocking Valley railroads in Ohio. Light-section rails are no longer much in de-

THE IRON AGE Composite Prices

Finished Steel

Dec. 7, 1926, 2.453c. Per Lb.

One week ago	2.453c.
One month ago	2.453c.
One year ago	2.453c.
10-year pre-war average	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.403c.,	May 18
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

Dec. 7, 1926, $20.04 Per Gross Ton

One week ago	$20.13
One month ago	20.21
One year ago	21.79
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$19.46,	July 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c.
Del'd Cleveland	2.19c.
F.o.b. Cleveland, sizes up to 1-in. rounds	2.00c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c. to 2.10c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	1.90c. to 2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.15c. to 2.25c.
Del'd Cleveland	2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago,	2.50c. to 2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.30c. to 2.40c.
Bars, f.o.b. Chicago	2.40c.
Bars, Cleveland	2.45c.
Shafting, ground, f.o.b. mill	*2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.10c. to 3.50c.
Strips, f.o.b. Cleveland mills	3.00c. to 3.40c.
Strips, delivered Chicago	3.40c. to 3.70c.
Strips, f.o.b. Worcester mills	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1-in.	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton	
F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.30c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill	2.50c.
Nos. 9 and 10, del'd Philadelphia	2.62c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh	2.90c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill	3.20c.
No. 24, del'd Philadelphia	3.22c. to 3.32c.
No. 24, f.o.b. Birmingham	3.30c. to 3.40c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade	4.25c.
No. 24, f.o.b. Pittsburgh, B grade	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill	4.05c.
No. 24, del'd Philadelphia	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham	4.20c. to 4.30c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill	3.25c. to 3.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.25c.

Long Ternes

No. 24, 8-lb. coating, f.o.b. mill	4.30c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(1½% Nickel, 0.10% to 0.20% Carbon)	$3.20 to $3.25
2300	(3½% Nickel)	4.35 to 4.50
2500	(5% Nickel)	5.50 to 5.65
3100	(Nickel Chromium)	3.40 to 3.50
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.00 to 7.25
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.40 to 3.50
5200*	(Chromium Steel)	7.00 to 7.50
6100	(Chrom. Vanadium bars)	4.30
6100	(Chrom. Vanad. spring steel)	3.80
9250	(Silicon Manganese spring steel)	3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
	Chromium Molybdenum spring steel (1 — 1.25 Chrom., 0.30 — 0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	36.00
Light (from rail steel), f.o.b. mill	34.00
Light (from billets), f.o.b. Ch'go mill	$36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.00
Spikes, ½ in. and smaller	2.90 to 3.25
Spikes, boat and barge	3.25
Track bolts, all sizes	3.90 to 4.50
Tie plates, steel	2.85
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel			Iron		
Inches	Black	Galv	Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	12
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	12
¾	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1¾ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3½ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ to 1½ in.	52	3½ to 3½ in.	47
1¾ in.	36	4 in.	50
2 to 2¼ in.	31	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3½ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

mand. It is not the time when construction work affords much outlet, and the reaction in coal prices has made it hard for mines that started up recently to keep going at the wage scales now in effect. There is a fairly good movement of standard spikes and of tie plates, but small spikes are dull. Prices are given on page 1649.

Tubular Goods.—A slowing down of demand for standard-weight pipe and oil country goods is partially offset by a rather good amount of line-pipe business, which should help to sustain the operations of the lap-welded pipe furnaces during the winter. The pipe line from the Texas Panhandle to the Gulf of Mexico will take approximately 85,000 tons, as in addition to the 500 miles of 10-in. pipe, 300 miles of 12-in. have been placed. The Philadelphia Co. gas line to run from Kentucky to West Virginia is still working through the mills, and the gas lines to run east and west from Amarillo, Tex., are before the market. Boiler tube business is not particularly satisfactory, although a fair amount of tonnage is embraced in recent locomotive orders. Discounts are given on page 1649.

Sheets.—New business is very light and there will be no real test of prices so long as consumers can draw against contracts carrying lower prices than the mills commonly are asking. There is, however, increased need of orders to provide reasonably economical mill schedules, and price competition is greater than it has been. It is more pronounced in black and blue annealed sheets than in galvanized, but in the latter, 3.85c., base Pittsburgh, is not often exceeded. Buyers are not showing much inclination to place first quarter contracts, because the incentive of possible price advances is lacking. Shipments of galvanized sheets by the American Sheet & Tin Plate Co. in November were the largest of any one month since May, 1916. That company was called on to supply some exceptionally large export demands last month, notably to Cuba, for the repair of buildings damaged by the tropical storm of recent date. Automobile body sheets are moving fairly well against suspended orders, but new business is still rather light. Mill operations are still averaging about 70 per cent of capacity. Prices are given on page 1649.

Tin Plate.—On its new basis of capacity, the American Sheet & Tin Plate Co. ran 100 per cent during the last four days of last week. The La Belle works, Wheeling, started, as scheduled, on Dec. 1, giving the company full operation of its 256 mills. Tin plate contracting is on a very orderly scale. Comparatively few large consumers have placed formal contracts for the first half of 1927, but their requirements are fairly well known, and specifications for January shipment are sufficient to keep the mills well engaged this month. Productive capacity in tin plate is quite ample in the way the business is now spread out over the year, and with the recent addition to capacity in Chicago, consumers do not have to worry about getting what they need when they need it. The Continental Can Co. has closed for its first half requirements, but the American Can Co. has not yet acted except possibly in an oral way.

Cold-Finished Steel Bars and Shafting.—A fair amount of first quarter business is coming to makers here at 2.40c., base Pittsburgh, but current demands are light and specifications against third quarter contracts are moderate on account of inventory considerations and the fact that automobile parts makers are not very busy. On a tonnage basis, 2.30c., base, is the ruling figure on current shipments.

Bolts, Nuts and Rivets.—The rivet market is unsettled and weak. On large rivets most makers are quoting $2.60, base, per 100 lb., Pittsburgh, but the ruling prices on sales range from $2.40 to $2.50, as the extra of $4 per ton on boiler rivets has been waived by at least one large producer. Business in bolts and nuts is better this month than it was in November, but not sufficiently improved to bring about any material increase in production, which is still around 50 per cent of capacity. There is little shading in bolts and nuts.

Ferroalloys.—The past week has brought out some contracting for ferromanganese for the first half of 1927, but several of the larger consumers have not yet acted and it is doubted that business has reached some of the published estimates. Most users of 50 per cent ferrosilicon have not yet covered for 1927.

Coke and Coal.—Buyers are indifferent, and producers continue to make frequent price revisions in an effort to uncover a trading level. Producers shipping against contracts for coal and coke are getting prices that enable them to pay the wage scales now in effect. But producers without regular consuming connections find no place to go with their output and have to make prices low enough to tempt buyers to take supplies they do not urgently need. Export coal contracts will generally expire this month, and it will take a considerable increase in domestic demand to absorb the output thus released. If it cannot be absorbed at prices profitable to producers, there will be mine suspensions and then wage reductions. Spot coke is almost unsalable, and against sales of furnace fuel on the recent peak at $5 and even $5.50 per net ton at ovens, the market now is quotable at $3.50 to $3.75, and this for standard furnace coke as distinct from heating coke. Foundry coke is quotable at $4.50 to $5.50, but sales at more than $5 are exceptional.

Old Material.—The market is quiet but shows a fairly firm undertone. Against a limited consumer interest is a disinclination by dealers to sell much in the fear of not being able to cover except at a loss. One Pittsburgh district melter has bought heavy melting steel at $16.75, but there also have been sales of No. 1 railroad grade at $17.50, making the market quotable at those extremes. The ruling price is $17 on this grade. Blast furnace material is easier, with sales noted at $12.50. Some low phosphorus bloom and billet ends have been sold at $21.50 to a Pittsburgh district user, but this seems to be the bottom rather than the top of the market. The December list of the Norfolk & Western contains 4955 gross tons of old material.

The Baltimore & Ohio Railroad is taking bids until noon, Dec. 13, on 25,073 gross tons of scrap, including 4500 tons of miscellaneous rails, 3100 tons of No. 1 heavy melting and 2000 tons of destroyed steel cars.

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 24 gage), 25 or more bundles	3.95c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.70c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.40c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	$3 00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton	
Heavy melting steel	$16.75 to	$17.50
Scrap rails	16.25 to	16.50
No. 1 cast, cupola size	16.00 to	16.50
Compressed sheet steel	15.75 to	16.00
Bundled sheets, sides and ends	14.75 to	15.00
Railroad knuckles and couplers	18.50 to	19.00
Railroad coil and leaf springs	18.50 to	19.00
Low phosphorus blooms and billet ends	21.50 to	22.00
Low phosphorus mill plates	21.00 to	21.50
Low phosphorus, light grade	17.50 to	18.00
Low phosphorus punchings	18.50 to	19.00
Steel car axles	21.50 to	22.00
Cast iron wheels	16.00 to	16.50
Rolled steel wheels	18.50 to	19.00
Machine shop turnings	11.75 to	12.00
Short shoveling steel turnings	13.00 to	13.50
Sheet bar crops	17.00 to	17.50
Heavy steel axle turnings	15.50 to	16.00
Short mixed borings and turnings	12.50 to	12.75
Heavy breakable cast	15.00 to	15.50
Cast iron borings	12.50 to	12.75
No. 1 railroad wrought	16.75 to	17.50
No. 2 railroad wrought		17.00
Railroad or automobile malleable scrap	17.00 to	17.50

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and over	$35.00
Rerolling, under 4-in. to and including 1¾-in.	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
Smaller than 8 in. x 2 in.	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base	$45.00
Screw stock	$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 52% manganese, from the Caucasus	40c.
Manganese ore, high grade, nominal	35c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	$11.75 to $12.50
	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.50
	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	50c. to 55c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$3.50 to $3.75
Foundry, f.o.b. Connellsville prompt	4.50 to 5.50
Foundry, by-product, Ch'go ovens	9.75
Foundry, by-product, New England, del'd	13.50
Foundry, by-product, Newark or Jersey City, delivered	10.59 to 11.77
Foundry, Birmingham	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.75 to $2.25
Mine run coking coal, f.o.b. W. Pa. mines	2.00
Mine run gas coal, f.o.b. Pa. mines	2.10 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.65 to 1.80
Gas slack, f.o.b. W. Pa. mines	1.90 to 2.00

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd	$100.00
Foreign, 80%, Atlantic or Gulf port, duty paid	100.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$37.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$85.00 to $87.50
75%	145.00 to 150.00

Per Gross Ton Furnace		*Per Gross Ton Furnace*	
10%	$35.00	12%	$39.00
11%	37.00	14 to 16%	$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio Furnace

Per Gross Ton		*Per Gross Ton*	
10%	$34.00	12%	$38.00
11%	36.00		

Silvery Iron

F.o.b. Jackson County, Ohio Furnace

Per Gross Ton		*Per Gross Ton*	
6%	$26.50	10%	$32.00
7%	27.50	11%	34.00
8%	28.50	12%	36.00
9%	30.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.05 to $1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$18.00
No. 2 lump, Illinois and Kentucky mines	$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid,	$17.00 to $17.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works	
	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$38.00 to $40.00
Maryland	43.00 to 46.00	38.00 to 40.00
New Jersey	55.00 to 75.00	
Ohio	40.00 to 43.00	38.00 to 40.00
Kentucky	40.00 to 43.00	38.00 to 40.00
Illinois	40.00 to 43.00	35.00 to 38.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to 7.50	

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$40.00 to $43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa	40.00

Chrome Brick

	Per Net Ton
Standard size	$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4.00c. per lb. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. per lb. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagons nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
1 in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅝ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	Per 100 Net U.S.S.		Per 100 Net S.A.E.	Per 100 Net U.S.S.
¼-in.	$0.44	$0.44	¾-in.	$2.35	$2.40
5/16-in.	0.515	0.515	⅞-in.	3.60	3.60
⅜-in.	0.62	0.66	1-in.	5.65	5.80
7/16-in.	0.79	0.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.40 to $2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	$2.60 to 2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70, 10 and 5 to 70 and 10
F.o.b. Cleveland	70, 10 and 5 to 70 and 10
F.o.b. Chicago	70, 10 and 5 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened,	80 and 5
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S.A.E. thread,	80, 10 and 10
Upset set screws	80, 10 and 5
Milled studs	70 and 5

Chicago

Large Railroad Car Inquiries—Pig Iron Melt Is Lower

CHICAGO, Dec. 7.—Railroad equipment inquiry is active in this territory, and mills are looking forward to the placing of more than 125,000 tons of steel for cars that are now before the trade. Fresh inquiry this week includes 3220 freight cars and 70 passenger cars for the Missouri Pacific. The Santa Fe is taking figures on 1800 cars, and if car builders' expectations materialize, that railroad will soon enter the market for 1000 refrigerator cars and a large amount of passenger equipment. That the contract for cars for the St. Paul is one step nearer is indicated by the report that the receivers have been authorized by the Federal court to spend $3,500,000 for new rolling stock.

Ingot production in the Chicago district is steady at 80 to 85 per cent of capacity. Rail production is slowly being increased and now totals close to 16,000 tons per week. This figure is about equal to the recent loss in shipments of plates, shapes and bars. The demand for soft steel bars has improved, but specifications for plates are a trifle lighter. Forward contracting is sluggish, and new buying falls short of shipments. On the other hand, specifications for all-steel products hold at the average of the previous week and are equal to mill shipments.

Pig Iron.—Spot buying is more active. This is the result of unusually low stocks in the hands of users rather than an indication of any upturn in the tonnage being melted in this district. First quarter contracting is slowing down. Many foundries are figuring on shutdowns of from one to two weeks during the holiday period, and shipments from furnaces are correspondingly lighter. Malleable plants are for the most part quiet, but several releases have been received this week from makers of automobiles. A user south of Chicago has closed for 2000 tons of malleable for first quarter delivery. Orders for charcoal iron are few in number and small.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	27.04
Southern No. 2 (all rail)	26.01
Southern No. 2 (barge and rail)	24.18
Low phos., sil. 1 to 2 per cent, copper free	$31.50 to 32.50
Silvery, sil. 8 per cent	33.29
Bessemer ferrosilicon, 14 to 15 per cent	46.79

Ferroalloys.—Foreign competition has forced the price of 19 to 21 per cent spiegeleisen to $37, base Hazard, Pa., or $44.56 delivered. On the whole, this market is quiet, with little or no interest being shown either in spot buying or forward contracting.

We quote 80 per cent ferromanganese, $107.56, delivered Chicago; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $44.56, delivered Chicago.

Coke.—Chicago makers of by-product foundry coke have not announced first quarter contract prices. In the meantime Eastern sellers are quoting $5.50 to $6.50, f.o.b. Connellsville. The freight rate to Chicago is $4.16, which makes the delivered price range $9.66 to $10.66. There is no lessening in shipments from local ovens.

Plates.—Railroad equipment is the center of interest in the Western plate market. The Santa Fe has made inquiry for 1500 box and 300 gondola cars, and the Missouri Pacific is asking for prices on 3220 cars of various types. The trade looks for an Illinois Central inquiry for not less than 4000 cars at an early date. Counting the inquiries of the St. Paul and the Rock Island, there are now more than 9500 freight cars out for figures. Adding the expected inquiry from the Illinois Central, business now in sight from Western railroad totals 14,000 to 15,000 cars, which will require about 150,000 tons of plates, shapes and bars. New inquiry for passenger equipment includes 70 cars of various types for the Missouri Pacific. Bids are being submitted by Western car builders on 2000 cars for the Norfolk & Western, 3000 cars for the Baltimore & Ohio and 750 cars for the Lehigh Valley, a total of 5750 cars, which will require about 57,000 tons of plates, shapes and bars. The Pere Marquette will purchase a car ferry, which will require 2500 tons, and an oil producer will soon enter the market for a tank ship for the Great Lakes, calling for 3000 tons. Awards of oil storage tanks are small for the week, but pending inquiry is heavy. Tankage projects, together with several gas holders, total more than 20,000 tons. Tank shops in this territory are heavily engaged on rush order contracts from oil producers and refiners. Shop bookings are still close to six weeks, following two weeks during which new business from the oil fields has been light. Mill deliveries on plates are prompt. The large producers are holding steadily to 2.10c., Chicago, but this price is not being adhered to so rigidly by some of the smaller mills.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Structural Material.—Structural awards are light, but in the meantime fresh inquiry continues to swell the total volume of business before the trade. The Cook County, Ill., jail calls for 5000 tons, and a Chicago water works crib will take 750 tons. A bridge across the Mississippi River at Cape Girardeau, Mo., will require 4100 tons. The Midland Club, Chicago, has passed through a receivership, and an award of 3000 tons for its building is expected this week. All told, there is not less than 40,000 tons of structural material on inquiry in this market. Awards total about 3000 tons. Plans for the State Bank of Chicago Building, calling for 12,000 tons, are not complete in all details, and fabricators are being asked to submit bids on a pound basis. Specifications from shops are in good volume, and in virtually all cases they represent actual bookings, as is shown by the fact that for the most part orders call for material cut to length. For the first 11 months of 1926 the valuation of new construction in Chicago was $341,500,000. The total for the entire year, 1925, was $308,400,000.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Bars.—Activity among users of soft steel bars is more pronounced than for several weeks past. Sales are double, and specifications are triple, those of the previous week. New business is wholly for delivery over the remainder of the year or for shortly after Jan. 1. There is little evidence that users are interested in contracting for their advance requirements. The greatest improvement in the volume of specifications is from makers of automobile parts, who now have greater confidence in the future. For the most part, producers are holding firmly to 2.10c., Chicago, on bars, although occasionally concessions are heard of on light tonnages sold by some of the smaller mills. The demand for alloy steel bars holds steady, and prices show no change. Iron bars are quoted at 2c., Chicago. Several railroads have closed for their first quarter requirements, but on the whole this market is quiet and mill operations are close to the low point of the year. Rail steel bars are quoted at 1.90c. to 2c., Chicago. In this immediate territory 2c. appears to be holding well, but competition in the West and the Northwest is keen and most sales are at 1.90c., base Chicago. First quarter commitments in hard bars are more numerous, but the total volume of contracts signed for the first three months of next year is small and below the total at this time a year ago. Mills that make tubing from old rails have opened books for the coming quarter and find inquiry fairly active. Fence post specifications for immediate delivery are in good volume, considering the time of the year, and the delivery rate maintained so far in December is slightly in excess of that in November. Both rail steel bar mills at Chicago Heights are operating double turn, and order books assure the continuation of this rate up to the end of the year.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c. base, Chicago; rail steel bars, 1.90c. to 2c., base, Chicago.

Rails and Track Supplies.—The feature of this market is the placing by the New York Central of 2,500,000 tie plates, 20,000 kegs of spikes, 2500 tons of angle bars and 2000 kegs of bolts. The tie plates were distributed as follows: 1,050,000 to the Illinois Steel Co., 780,000 to the Bethlehem Steel Co., 250,000 to the Inland Steel Co., 100,000 to the Jones & Laughlin Steel Corporation, and 320,000 to Dilworth, Porter & Co. The Bethlehem Steel Co. took 6000 kegs of spikes; Jones & Laughlin, 3000 kegs; the Illinois Steel Co., 8500 kegs, and the Inland Steel Co., 2500 kegs. The Illinois Steel Co. was awarded 57,100 angle bars, and 17,600 pieces went to the Inland Steel Co. Both the Illinois and Inland companies participated in the distribution of the bolts. The Chesapeake & Ohio and a subsidiary line, now being constructed, placed 10,000 tons of tie plates in the East. Inquiry for track accessories in the Western market totals 35,000 tons.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, $36 to $38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c., per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Cast Iron Pipe.—The National Cast Iron Pipe Co. has taken 1100 tons of 6 to 12-in. Class B pipe for Mount Prospect, Ill. Winter buying on the part of municipalities is lagging, but to the east of Chicago public utilities have made known liberal requirements for the future. Detroit is now in the market for 3180 tons of 8-in. Class B pipe. Some small business is being taken from day to day at prices that do not show strength. Makers' books are gradually growing smaller, and present quotations are nominal in view of the fact that there has been no real test of the market for several weeks.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., $51.20 to $52.20; 6-in. and over, $47.20 to $48.20; Class A and gas pipe, $4 extra.

Sheets.—First quarter contracting is progressing slowly, and users, rather than commit themselves for an extended period, are sending orders of carlot proportions to mills for delivery during the first two or three weeks of January. A user to the west but close to Chicago is in the market for 1300 tons of black and 800 tons of blue annealed sheets. This inquiry may prove to be a test of present prices, which have been held steady throughout a period when orders were few and of small proportions. Specifications for blue annealed sheets are more liberal and are about equal to those for black and galvanized sheets. Chicago district mills are operating at close to capacity, and deliveries on new business range from two to six weeks, depending upon the grade asked for. Shipments made by the Inland steel Co. so far this year are in excess of those for the entire year, 1925.

Chicago delivered prices from mill are 3.25c. for No. 24 black; 2.55c. for No. 10 blue annealed; 4.10c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Wire Products.—With mills operating at close to 50 per cent of capacity, producers of wire products look for little improvement until well after the first of the year. Early winter buying has been unusually light, but this is taken as a sign that spring trade will be of good proportions. First quarter contracting is progressing very slowly, and in the meantime specifications from the manufacturing trade are holding steady at the rate of early December.

Reinforcing Bars.—Fresh inquiry is unusually light, and there is little doubt that the dull winter season in reinforcing bars is at hand. Architects' offices are less active, and there appears to be a decided drop in the number of proposed apartment and hotel buildings. On the other hand, the trade understands that money for speculative building is not scarce. Several old inquiries are more active, and in some quarters it is believed that awards during December may exceed the total for November. The more active projects include 700 tons for a public school building, 500 tons for a theater and several apartment buildings requiring from 300 to 500 tons each. Prices are weak, ranging from 2.25c. to 2.60c., Chicago warehouse. Awards and new inquiries are shown on page 1662.

Bolts, Nuts and Rivets.—Specifications are being received in smaller volume, and it is now evident that users will not order out more than about 75 per cent of their fourth quarter commitments. First quarter contracts are being presented to buyers, and although little resistance is found, users are in doubt as to the future and are closely scanning protective clauses.

Old Material.—The market is showing signs of greater weakness as dealers become more pressed to dispose of distress tonnage. Railroads are shipping heavily against past lists, and it now develops that at least some of that tonnage was bought on speculation rather than to cover actual obligations. Consumers are inactive and are showing little interest in quotations, which are generally near the lower side of the market. A malleable foundry has taken a small tonnage of railroad malleable at $16.50 per gross ton, delivered. Several carloads of No. 1 wrought have been sold to a user at $12 per net ton, delivered. Heavy melting steel is weaker, and trading among dealers is at about 25c. below prices ruling a week ago. Mills continue to take full shipments against past obligations, but they will not place orders at the prices offered to them. The Western Electric Co. is expected to close this week for its year's output of bundles. Railroad offerings this week include 5000 tons by the Great Northern and 1100 tons by the Pere Marquette.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton

Heavy melting steel	$13.00 to $13.50
Frogs, switches and guards, cut apart, and miscellaneous rails.	14.50 to 15.00
Shoveling steel	13.00 to 13.50
Hydraulic compressed sheets	11.00 to 11.50
Drop forge flashings	9.50 to 10.00
Forged cast and rolled steel carwheels	16.50 to 17.00
Railroad tires, charging box size.	17.50 to 18.00
Railroad leaf springs, cut apart	16.50 to 17.00
Steel couplers and knuckles	15.50 to 16.00
Coil springs	17.25 to 17.75
Low phosphorus punchings	15.50 to 16.00
Axle turnings, foundry grade	13.00 to 13.50
Axle turnings, blast fur. grade	9.50 to 10.00
Relaying rails, 56 to 60 lb	25.50 to 26.50
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	16.50 to 17.00
Steel rails, less than 3 ft	16.25 to 16.75
Iron rails	13.50 to 14.00
Cast iron borings	9.50 to 10.00
Short shoveling turnings	9.50 to 10.00
Machine shop turnings	6.50 to 7.00
Railroad malleable	16.00 to 16.50
Agricultural malleable	15.00 to 15.50
Angle bars, steel	15.00 to 15.50
Cast iron carwheels	14.50 to 16.00

Per Net Ton

No. 1 machinery cast	16.00 to 16.50
No. 1 railroad cast	15.50 to 16.00
No. 1 agricultural cast	15.50 to 16.00
Stove plate	14.00 to 14.50
Grate bars	13.50 to 14.00
Brake shoes	13.00 to 13.50
Iron angle and splice bars	14.00 to 14.50
Iron arch bars and transoms	18.75 to 19.25
Iron car axles	22.00 to 22.50
Steel car axles	17.00 to 17.50
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.50 to 12.00
No. 1 busheling	10.25 to 10.75
No. 2 busheling	6.25 to 6.75
Locomotive tires, smooth	16.00 to 16.50
Pipes and flues	9.00 to 9.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 24 black sheets	3.95c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	4.80c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.

	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	47½
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb	$3.30
Common wire nails, base per keg	3.05
Cement coated nails, base, per keg	3.05

New York

Large Active Inquiries for Cars—Pig Iron Quiet and Softer

NEW YORK, Dec. 7.—The current decline in steel business is having an indirect effect on the pig iron market through aggressive solicitation of the foundry trade by steel works furnaces. Steel works stacks, particularly in the Buffalo district, are pressing for business and are quoting as low as $18, base Buffalo, or $1 below what has been the ruling price for some time. Abendroth Brothers, Port Chester, N. Y., who were in the market for 1000 tons of foundry, are understood to have placed the order with a Buffalo producer on that basis for barge delivery. The recent cold spell resulted in freezing a number of late barge shipments en route in the State barge canal. Sales during the past week in this district did not exceed 6000 tons, all told. With inventory-taking close at hand, melters are not in a mood to buy, and, what is more, most of them have covered at least part of their requirements for the first quarter. Foreign iron is not a factor at present, and eastern Pennsylvania producers continue to quote $22.50, base furnace. That price, however, has undergone no real test, and it is intimated that $22 would be done on an attractive tonnage.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices $1.39 to $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	$23.89 to $25.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	24.39 to 25.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	24.89 to 26.02
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	22.91 to 23.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	28.04 to 29.54

Ferroalloys.—Persistent reports that 40,000 to 50,000 tons of ferromanganese has been sold to consumers for 1927 cannot be verified and are generally discredited. Contracting for next year is admittedly slow but it is gradually coming to a head, and fairly large contracts may be closed within the next week or two. The price is $100, seaboard or furnace. Sales are reported of several carloads and small lots. The quotation for the higher grade of spiegeleisen is now $37, furnace, instead of $40, but the market is very quiet. Very little is heard of contracting for 1927, but there are sales of carloads and small lots nearly every day.

Warehouse Business.—The year-end dullness has set in, and only small lots of material are moving from stocks. Sales of black and galvanized sheets are limited, and a slight tendency to shade the current schedule of 4.35c. per lb. on black and 5.10c. per lb. on galvanized is noticeable, although the larger sellers are adhering strictly to these prices. Demand for structural material is confined to the purchase of an occasional lot of a few tons. Zinc sheets, which have been unchanged for several months, are off about 25c. per 100 lb.

Finished Steel—Buying of railroad equipment shows more promise than at any time in months. With inquiries which have reached car builders during the past week, there is a total of more than 14,000 cars on which bids will go in before the first of the year. The Missouri Pacific is in the market for 3220, the Baltimore & Ohio for 3000, the Lehigh Valley for 1200, the Santa Fe for 1800, the Rock Island Lines for 2500 and the Norfolk & Western for 2000. These, together with some smaller inquiries, bring the total to 14,070. The Illinois Central has provided in its budget for a purchase of 9200 cars, but the inquiry for these has not appeared. In addition, there are inquiries for a total of 319 passenger coaches. Meanwhile, steel business is more or less marking time. Consumers and jobbers continue to keep inventories down to a minimum, and frequently are not specifying as fully on their fourth quarter contracts as in the two preceding months of the quarter. Not many first quarter contracts are being entered, as the tonnages which will remain unspecified at the end of the year will carry many buyers well through January. As there is no prospect of a change in price on plates, shapes and bars, both buyers and sellers are willing to waive the formality of making new contracts. The same applies also to sheets, as fourth quarter prices are being continued into first quarter, notwithstanding the fact that nominally the first quarter prices are $2 a ton higher. The sheet quotations of 3.95c. for galvanized, 3.10c. for black and 2.40c. for blue annealed have been in effect on only a small part of the fourth quarter tonnage, and are being disregarded almost wholly now both for spot shipments and first quarter. Quotations for prompt and forward delivery are being quite freely made at 3.85c. for galvanized, 3c. for black and 2.30c. for blue annealed. All that can be said as to the volume of business is that reports agree that it will un-

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.34c.
Soft steel bars and small shapes	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons	4.00c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	6.25c.
Hoops	4.49c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage)	3.89c.
Long terne sheets (No. 24 gage)	5.80c.
Standard tool steel	12.00c.
Wire black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.
	Per Cent Off List
Machine bolts, cut thread	40 and 10
Carriage bolts, cut thread	30 and 10
Coach screws	40 and 10
Boiler Tubes—	**Per 100 Ft.**
Lap welded steel, 2-in	$17.33
Seamless steel, 2-in	20.24
Charcoal iron, 2-in	25.00
Charcoal iron, 4-in	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
⅛-in. butt	46	29
¼-in. butt	51	37
⅜-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
⅛-in. butt	4	+19
¼-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
3-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box	$6.45	$6.20
Charcoal, per box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20	4.15c.
No. 22	4.30c.
No. 24	4.35c.
No. 26	4.45c.
No. 28*	4.60c.
No. 30	4.85c.

Sheets, Galvanized

	Per Lb.
No. 14	4.50c. to 4.75c.
No. 16	4.60c. to 4.85c.
No. 18	4.75c.
No. 20	4.90c.
No. 22	4.95c.
No. 24	5.10c.
No. 26	5.35c.
No. 28*	5.60c.
No. 30	6.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

doubtedly be smaller than that of November. Small rush shipments make up the bulk of the current tonnage.

We quote mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Cast Iron Pipe.—Municipal purchasing of water pipe has ceased, but there is a fair volume of inquiry in the market from privately owned gas companies, specifying their spring requirements. Prices are unchanged, but makers are willing to consider business on the basis of a concession for winter delivery. Thus far, buyers have shown little inclination to take advantage of this lower price. The export inquiries that have been before the market for several weeks, calling for small tonnages of pipe for shipment to Colombia, Mexico and Honolulu, and a sizable lot for the Dominican Republic, are still open. The inquiry of the United Gas Improvement Co., Philadelphia, for its spring requirements of gas pipe, has not yet been placed. The Consolidated Gas Co., New York, is taking bids on about 2000 tons of gas pipe.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, $49.60 to $51.60; 4-in. and 5-in., $54.60 to $56.60; 3-in., $64.60 to $66.60; with $5 additional for Class A and gas pipe.

Reinforcing Bars.—Awards of concrete reinforcing bars during the last week were very light, nearly all being for 50 tons or less. The slump in business is considered seasonal, but the sale of foreign bars at prices considerably under the established market is tending to weaken the New York warehouse price, which has been quoted for some time at 3.15c., delivered at job. The mill prices of 2c., Pittsburgh, for large lots, and 2.10c. for lots of less than 100 tons, are holding fairly well.

Old Material.—Most of the eastern Pennsylvania mills are applying severe inspection standards at present, but buying prices continue unchanged at about $15.50 per ton, delivered, for No. 1 heavy melting steel. For yard steel delivered to a Pottsville, Pa., consumer, $13 to $13.50 per ton is being paid, with material for this delivery coming out freely. Borings and turnings are one of the most active grades of scrap at present, but mills receiving shipments on contracts for borings and turnings are requiring a high grade of material. Buying prices on heavy breakable cast range from $15.75 to $16.50 per ton delivered, depending upon the freight rate. Eastern Pennsylvania consumers of heavy melting steel are apparently still willing to buy at prices considered too low by brokers. Consequently little activity is expected until after the first of the year.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	$9.25 to $9.75
Heavy melting steel (railroad or equivalent)	11.75 to 12.85
Rails for rolling	12.50 to 13.00
Steel car axles	18.50 to 19.00
Iron car axles	24.00 to 24.50
No. 1 railroad wrought	13.00 to 14.00
Forge fire	9.25 to 9.75
No. 1 yard wrought, long	12.00 to 13.00
Cast borings (steel mill)	9.25 to 9.75
Cast borings (chemical)	13.00 to 13.50
Machine shop turnings	9.25 to 9.75
Mixed borings and turnings	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long)	9.75 to 10.25
Stove plate (steel mill)	9.25 to 9.75
Stove plate (foundry)	11.00 to 11.50
Locomotive grate bars	10.25 to 10.75
Malleable cast (railroad)	15.50 to 16.00
Cast iron carwheels	12.00 to 12.50
No. 1 heavy breakable cast	11.75 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.00 to $16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.50 to 15.00
No. 2 cast (radiators, cast boilers, etc.)	13.50 to 14.00

Coke.—Demand for coke is active, and apparently little current purchasing is going into stocks. A wide range in price is developing between first quarter and first half and prompt shipment coke. Standard foundry for spot delivery is quoted at $5 to $5.50 per ton, with coke for shipment next year bringing $6 to $6.50 per ton, Connellsville. Standard furnace for spot delivery is quoted at $3.75, Connellsville, and occasionally less. One consumer in this district is endeavoring to buy at $3.25, Connellsville, but thus far without success. By-product coke from the local producer is unchanged at $10.59 to $11.77 per ton, delivered Newark or Jersey City, N. J. A New York State producer of by-product has been shipping a grade suitable for water gas and domestic use at $8 per ton, on barge, New York.

Cleveland

Sheets Weaker in a Dull Steel Market—Two Blast Furnaces Put Out

CLEVELAND, Dec. 7.—Mills are getting a limited volume of specifications for finished steel, mostly steel bars for January shipment, but there is little call for steel for December delivery. A fair amount of wire business has been booked for January shipment. Some of the producers report an improvement in the demand for structural material over November, but less activity in steel bars. Following some fair releases from the automotive industry, new demand from that source is again low and is limited to small-lot orders.

While it is expected that present prices on steel bars, plates and structural material will prevail through the first quarter, consumers as a rule are showing no interest in covering except for some of their January requirements. Some of the smaller plate mills are taking contracts at 1.90c., Pittsburgh, for the first quarter. Steel bars are quoted by a local mill at 1.90c. to 2c., Cleveland, the lower price for round lots, but outside mills are declining to shade 2c., Pittsburgh. Plates are firm at 1.90c., Pittsburgh, and structural shapes, at 2c. An inquiry has come out for 3000 tons of structural steel for a department store in Akron, Ohio, but not much other building work is being figured on in this territory. In Detroit several large building projects are in prospect.

In pig iron the market is even duller than in steel. The Corrigan, McKinney Steel Co. has blown out two of its Cleveland furnaces. It was previously reported that they would be banked.

Pig Iron.—The market continues unusually dull, and sellers do not look for much activity before next month. One producer sold 4000 tons in small lots during the week and has inquiries for 3000 tons pending. While prices are untested, the market in the Valley district appears to have settled down to $19, furnace, on foundry and malleable iron, although some producers are still asking $20. Cleveland furnaces quote $20, furnace, for local delivery and $19 for outside shipment, and other Lake furnaces quote a range of $19 to $20, furnace, except in Michigan, where $20.50, furnace, is the ruling price. Three Michigan automobile companies that suspended pig iron shipments a few weeks ago have released good lots in the past week. On the other hand, a number of Ohio foundries have ordered suspensions to become effective Dec. 15, when they will shut down for inventories.

Quotations below are per gross ton and, except on basic and low phosphorus iron, are delivered Cleveland, including a 50c. switching charge for local iron. Ohio silvery and Southern iron prices are based on a $3.00 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace	$18.50 to $19.00
Northern No. 2 fdy., sil. 1.75 to 2.25	20.50
Southern fdy., sil. 1.75 to 2.25	26.01
Malleable	20.50
Ohio silvery, 8 per cent	31.50
Standard low phos., Valley furnace	28.00

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes	3.00c.
Mild steel bars	3.00c.
Cold-finished rounds and hexagons	3.90c.
Cold-finished flats and squares	4.40c.
Hoops and bands	3.65c.
No. 24 black sheets	3.80c.
No. 10 blue annealed sheets	3.25c.
No. 24 galvanized sheets	4.65c.
No. 9 annealed wire, per 100 lb	$3.00
No. 9 galvanized wire, per 100 lb	3.45
Common wire nails, base, per keg	3.00

Sheets.—Prices are very irregular, and perhaps, on the whole, somewhat softer than a week ago. Some mills are still holding to regular quotations, but for prompt shipment there are quotations of 2.85c., Pittsburgh, and 3c., Valley Mill, for black sheets, 2.30c., Valley, for blue annealed, and 3.85c., Valley, for galvanized. In Detroit, quotations of 2.20c., Pittsburgh, are reported on blue annealed sheets. Some first quarter business is being taken on the basis of 3c., 2.30c. and 3.85c., Pittsburgh, for black, blue annealed and galvanized respectively, and some of the producers regard it as very improbable that higher prices will become effective for that delivery. The demand is light and limited to small lots.

Cold-Rolled Strip Steel.—The price range on cold-rolled strip steel is unchanged at 3c., Cleveland, for large lots, up to 3.25c. for car lots, and some mills are quoting these prices for the first quarter. One leading producer that is about to place quantity differentials in effect has not yet determined the maximum discounts on large lots. Although the demand is slow, some producers report slight improvement in orders over November.

Semi-Finished Steel.—Producers are showing little interest in first quarter contracts, although a local mill is now quoting present prices for that delivery. Specifications continue very light.

Warehouse Business.—Sales are light, the volume being somewhat below that of last month. Sheets are particularly slow. Regular prices are being well maintained.

Reinforcing Bars.—A few inquiries have come out aggregating several hundred tons. Locally there is some shading of the 2c., Pittsburgh, price on billet steel bars. Rail steel bars are unchanged at 1.80c., mill.

Bolts, Nuts and Rivets.—Local bolt and nut makers opened their books this week for the first quarter at present discounts. Specifications are light. The leading local rivet manufacturer has also opened its books for the first quarter at the present price of $2.60, Pittsburgh, for large rivets, and 70 and 10 per cent off for small rivets. One rivet manufacturer has announced that it will waive the usual differential of 20c. per 100 lb. for boiler rivets, but a local producer has not met this concession. Rivet specifications are fairly good.

Old Material.—A Cleveland consumer purchased 4000 to 5000 tons of blast furnace scrap during the week, paying $11.75 for mixed borings and turnings and busheling. Dealers are covering against these orders at $11.25. This is the only activity reported on the part of consumers. With the approach of inventory time, mills both in the Cleveland and Youngstown territories are holding closer on shipments and some have ordered complete suspensions. There is little tendency in either direction in the price situation, although heavy melting steel is rather weak and dealers are able to buy small lots at $14.50. With prices at a low level, the present absence of demand is not expected to lead to further concessions.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel	$14.50 to $14.75
Rails for rolling	16.25 to 16.50
Rails under 3 ft	16.50 to 17.00
Low phosphorus billet, bloom and slab crops	18.00 to 18.50
Low phosphorus sheet bar crops	16.50 to 17.00
Low phosphorus plate scrap	16.00 to 16.50
Low phosphorus forging crops	16.50 to 17.00
Cast iron borings	11.00 to 11.25
Machine shop turnings	9.00 to 9.25
Mixed borings and short turnings	11.00 to 11.25
Compressed sheet steel	13.50 to 14.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	14.00 to 14.50
Railroad malleable	16.50 to 17.00
Light bundled sheet stampings	12.00 to 12.50
Steel axle turnings	12.50 to 13.00
No. 1 cast	16.50 to 17.00
No. 1 busheling	12.00 to 12.50
No. 2 busheling	11.00 to 11.25
Drop forge flashings, 15 in. and under	11.50 to 12.00
Railroad grate bars	12.50 to 13.00
Stove plate	12.50 to 13.00
Pipes and flues	10.00 to 10.50

Iron Ore.—The ore shipping season closed Dec. 4, with a total water movement of 58,538,193 tons, or close to recent estimates. A detailed statement of the 1926 shipments will be found in another column.

Coke.—Prices are slightly easier on some premium brands of foundry coke. One producer has come out with a price of $6.25, ovens, on a premium grade for the first half, at which some business has been closed. Prices on standard brands range from $5 to $5.75, Connellsville. Heating coke is unchanged at from $3.50 to $4, Connellsville.

Philadelphia

Pig Iron Lags With Tendency Toward Weakness—Steel Volume Reduced

PHILADELPHIA, Dec. 7.—The first week of December indicates that the month may be the dullest of the year in steel, pig iron and scrap markets. Steel mill operations in the East are generally lower than in November, reflecting the smaller volume of new business and contract specifications, while pig iron is seemingly affected by the disposition of buyers to see whether the furnaces can maintain the higher prices which came with the coke flurry of several weeks ago. This schedule of quotations has made it possible for Buffalo, Port Henry and Troy, N. Y., furnaces to ship iron into this district at competing delivered prices. There has been no pig iron selling of importance except about 15,000 tons of basic to an Eastern plate manufacturer. On this business prices were slightly lower than have recently been named on smaller orders.

It is too early in the month to estimate the probable rate of steel buying as compared with last month. Reports vary, but in the main the number and size of orders show a falling off. This is particularly noticeable in steel bars, usually a good barometer of consumption among manufacturing industries generally. Structural business is also lighter, but a number of good-sized projects may be closed soon. Building plans under consideration point to an upward swing in this branch of the trade early in the new year. One building soon to come out for bids will require 12,000 tons.

The Pennsylvania Railroad has taken bids on 1,000,000 tie plates, 175,000 pairs of angle bars, 4,500,000 lb. of spikes and 830,000 track bolts for first quarter. The Chesapeake & Ohio is inquiring for its first quarter requirements, about 3000 tons of plates, shapes and bars.

Pig Iron.—Sales of 15,000 tons of basic pig iron to an Eastern steel company by two furnaces reflect a slight easing in prices, the average on the two lots being about $22, delivered. On foundry iron there has been no formal lowering of price, but sellers are plainly in a quandary, being faced on the one hand by continuing high costs and uncertainty as to the contract price for first quarter coke, and on the other by the disposition of buyers to await lower prices. Eastern Pennsylvania producers are finding their market more and more restricted. Some time ago they virtually lost the New England market, due to completion of furnaces at Everett, Mass., and Troy, N. Y., and within the past week or two they have had their own immediate district invaded by iron from Buffalo, Port Henry and Troy, N. Y., and in at least one instance iron from the Valley, taking a freight rate of $4.66, has come into a nearby consuming point. A reduction on Buffalo iron to $18, furnace, makes it possible to sell it at some points in the eastern Pennsylvania territory at $22.91, delivered, the freight rate being $4.91. Obviously, an eastern Pennsylvania furnace quoting the base grade at $22.50, furnace, is sometimes out of the running even at its own back door. Other New York State furnaces, having freight rates of $3.65 and $3.53 to points in this district, have recently undersold eastern Pennsylvania iron. It is natural to assume that eastern Pennsylvania furnaces will soon meet this competition, but there has not been enough important business in the past two weeks to develop any definite new price policy. The Keystone furnace of the Reading Iron Co.

will go in blast about Jan. 1, and iron for first quarter delivery is now being offered.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$23.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.76
East. Pa. No. 1X	24.26
Basic delivered eastern Pa.	$22.00 to 23.00
Gray forge	22.50 to 23.00
Malleable	23.50 to 24.00
Standard low phos. (f.o.b. New York State furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00
*Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
*Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17

*The freight rate from Virginia furnaces to Philadelphia is $5.17 per gross ton.

Ferroalloys.—An Eastern producer of ferromanganese has taken fairly large contracts for first half, totaling possibly 30,000 to 40,000 tons, but most of this has been sold to consumers in Pittsburgh and districts further west. All of these contracts contain a clause protecting the buyer against decline in price, and because of the fact that the settlement of the British coal strike may bring more aggressive British selling in this country, many consumers are holding off. There is also the fact that some will carry over good-sized stocks which they have specified for shipment against their lower-priced last half contracts, and such consumers are content to await market developments.

Billets.—One Eastern producer has sold about 3000 tons of billets in the past week, mostly for locomotive axles. The general market continues at $35, Pittsburgh, for rerolling quality and $40 for ordinary forging quality.

Plates.—Orders for plates continue in about the volume of the last few weeks, enabling Eastern mills to maintain an operation averaging about 50 to 60 per cent. Some contracts for first quarter are being entered, but as neither buyers nor sellers look for any price change within the near future, there is no particular incentive for buyers to cover their future requirements, mills being able to make quick deliveries. No deviation from 1.90c., Pittsburgh, is reported.

Structural Shapes.—While business is quiet, as measured by mill specifications for plain material and the volume of building contracts, there are indications of a revival of building work shortly after the first of the year in preparation for spring operations. A large project soon to come up for bids is the bank and office building at Broad and Sansom Streets for the Fidelity-Philadelphia Trust Co., which will take 12,000 tons. The general contract will soon be let for the Convention Hall at Atlantic City, calling for about 10,500 tons, and the steel for the Philadelphia Electric Co. building, about 4000 tons, is about to be awarded, probably to the American Bridge Co., which was low bidder. The Belmont Iron Works will fabricate 3700 tons for an addition to the plant of the Baldwin Locomotive Works, Eddystone, Pa., and the Bethlehem Steel Co. will furnish 1100 tons for a Pennsylvania Railroad bridge at Overbrook, Philadelphia. Plain material is quoted by Eastern mills at 1.90c. to 2c., Pittsburgh.

Bars.—New business in merchant steel bars and concrete reinforcing bars is at a minimum, and specifications against contracts have also shown a falling off. Owing to the large bar-producing capacity, the reduction in volume has been felt as much as in any branch of the steel trade. There will be some carry-over tonnage on contracts into first quarter. Quotations on prompt shipments and first quarter contracts are held at 2c., Pittsburgh.

Sheets.—Quite in contrast with the fairly firm price situation on other major steel products, the price situation on sheets is somewhat chaotic. With some mills still holding to quotations of 3.95c. on galvanized, 3.10c. on black and 2.40c. on blue annealed, Pittsburgh base, most of the current business is being done at $2 less a ton on galvanized and blue annealed and at $2 to $4 a ton less on black sheets. First quarter contracts have been made at 3.85c., 3c. and 2.30c., for the three grades in the order above named.

Imports.—Last week's imports of pig iron were only 1214 tons, of which 1116 tons came from France and 98 tons from Germany. Other imports were as follows: Chrome ore from Brazil, 1840 tons; chrome ore from Portuguese East Africa, 5150 tons; chrome ore from British South Africa, 5655 tons; manganese ore from British West Africa, 5473 tons; manganese ore from Chile, 2000 tons; blooms from France, 27 tons; bars from Belgium, 26 tons; structural steel from Belgium, 394 tons; steel rods from Belgium, 709 tons; steel bands from Belgium, 25 tons; structural steel from Germany, 26 tons; steel ingots from Canada, 13 tons.

Old Material.—The scrap market is extremely dull. Consumers of all grades are buying very little. Prices are unchanged.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$15.50 to $16.00
Scrap rails	15.50 to 16.00
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under	20.00 to 21.00
Couplers and knuckles	18.50
Rolled steel wheels	18.50
Cast iron carwheels	16.50 to 17.00
No. 1 railroad wrought	17.00 to 17.50
No. 1 forge fire	13.00
Bundled sheets (for steel works)	13.00
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.00
Machine shop turnings (for rolling mill)	13.00 to 13.50
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mill)	13.50
Cast borings (for chemical plant)	15.00 to 16.00
No. 1 cast	17.00 to 17.50
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	13.00 to 13.50
Stove plate (for steel works)	13.00 to 13.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.00 to 14.50
Shafting	21.00 to 22.00
Steel axles	23.00 to 24.00

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¼-in. and heavier	2.80c. to 3.00c.
Tank steel plates, ⅜-in.	3.00c. to 3.20c.
Structural shapes	2.75c. to 3.00c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c. to 3.20c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to ⅜-in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 24 black sheets	4.35c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	5.30c.
Diamond pattern floor plates—	
¼-in.	5.30c.
⅜-in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.60c.

Non-ferrous metals to the extent of $213,548,000 were imported into the United States during the first 10 months of 1926, compared with $179,465,000 in the 10 months of 1925. Department of Commerce figures show that imports exceeded exports ($156,890,000) in 1926; but imports in 1925 were less than the $198,569,000 of exports.

It is noted in the *C. F. & I. Industrial Bulletin* that on Oct. 12, 1926, rod mill No. 1 at the Minnequa works of the Colorado Fuel & Iron Co. had gone one year without a lost-time accident.

Birmingham

Lull in Pig Iron More Pronounced—Pipe Demand Drags—Steel Output Heavy

BIRMINGHAM, Dec. 7.—With a decline in the sale of small tonnages for prompt shipment, the pig iron market has become even less active. However, steady deliveries are being made against contracts, and merchant furnace operations remain unchanged. Ten blast furnaces in this State are on foundry iron, 11 are on basic, and one is making a special brand. The No. 6 furnace of the Tennessee Coal, Iron & Railroad Co. at Ensley, Ala., a 400-ton stack producing basic iron, has been blown out for repairs. Surplus stocks in furnace yards are not extensive and, in view of liberal specifications, will probably not increase much during the remaining weeks of the year. In many directions, however, there is a tendency for foundry melt to diminish. The curtailment of operations is believed to be temporary, and the consensus of opinion is that the new year will see a revival of activity. The larger melters have made virtually no purchases for first quarter shipment and are carrying little iron on their yards. Prices remain unchanged at $20, Birmingham, for No. 2 foundry iron.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$20.00
No. 1 foundry, 2.25 to 2.75 sil.	20.50
Basic	20.00
Charcoal, warm blast	30.00

Rolled Steel.—Open-hearth furnace operations are virtually at capacity, if due allowance is made for necessary current repairs. Moreover, output has been increased in this district by the starting up of three of four new 140-ton furnaces at the Fairfield, Ala., works of the Tennessee Coal, Iron & Railroad Co. Most of this steel will be converted into finished products, since the company sells little semi-finished steel. The fourth Fairfield furnace will be completed this month. Fabricating plants report a decline in business. The mills, however, are still very busy, particularly on plates, rails, track accessories and sheets. There is a fair movement of wire and nails also. Finished steel prices are unchanged.

Cast Iron Pipe.—With a further decline in the number of municipal lettings, current bookings in pressure pipe, particularly water pipe, are small. Demand for soil pipe and fittings has been light for some time. Pressure pipe shops are still able to maintain active operations on past bookings, which, however, are steadily being reduced. Quotations on pressure pipe remain unchanged at $39 to $40, Birmingham, for 6-in. and larger diameters.

Coke.—The market is active, with considerable contracting being done for the first half of next year. Foundry coke is firm at $5.50, Birmingham, with occasional spot tonnages commanding $6. Present bookings will justify steady operation of by-product coke ovens for some time. While there has been some recession in foreign demand for coal, the market is still active and there continue to be active operations throughout the Alabama coal fields.

Old Material.—Shipments are in good volume, but there are few new sales. There are particularly heavy deliveries of heavy melting steel, which was bought in large tonnages a few weeks ago. Considerable scrap continues to be used in blast furnaces. Quotations are weak, although unchanged.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	11.00 to 12.00
Steel axles	17.00 to 18.00
Iron axles	17.00 to 18.00
Steel rails	13.00 to 14.00
No. 1 cast	16.00 to 17.00
Tramcar wheels	16.50 to 17.50
Carwheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 8.50
Rails for rolling	15.00 to 16.00

Cincinnati

Quiet Rules in Pig Iron and Steel Marts—Shading in Sheets

CINCINNATI, Dec. 7.—With consumers buying only in single carload lots for immediate requirements and with no important inquiries appearing, the pig iron market is exceptionally quiet. A week ago dealers believed that melters would contract for first quarter before the end of December, but more recent opinion is to the effect that the present unsatisfactory condition will carry over into the new year. Prices in the Ironton district are unchanged at $20, base furnace, for No. 2 foundry. Malleable iron in this immediate territory is quoted at $20, base Ironton, but a concession ranging from 50c. to $1 a ton has been made in central and northern Ohio to meet competition from Lake producers. Jackson County silvery iron is firm at $28.50, base furnace, for 8 per cent. Only small quantities of Southern iron are moving north on a basis of $20, base Birmingham.

Based on freight rates of $3.69 from Birmingham and $1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$23.69
Alabama fdy., sil. 2.25 to 2.75	24.19
Tennessee fdy., sil. 1.75 to 2.25	23.69
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25	$21.89 to 22.39
So. Ohio malleable	21.39

Reinforcing Bars.—The Ferro Concrete Construction Co., Cincinnati, has been awarded a general contract for an addition to the Union Central Building, Cincinnati, which will require about 1500 tons of bars. Bids have been submitted on 200 tons for the new garage of the Pogue Co., Cincinnati. New billet bars are quoted at 2c., base Pittsburgh, and rail steel bars at 1.90c., base mill.

Warehouse Business.—Sales have declined slightly in the past week but are still in satisfactory volume for this late in the year. An important jobber reports the largest November bookings in the history of his company. Demand for bars, sheets and tank plates continues to be steady. Prices are firm and unchanged.

Finished Material.—Developments in the past week furnished additional evidence that consumers are interested solely in maintaining just enough stock to meet current manufacturing requirements. Sellers declare that it is almost impossible to get action on first quarter tonnage, even when shipments are to begin well after Jan. 1. Specifications against current contracts have been light, but producers are predicting an increase of considerable proportions probably during the last week in December. In the face of a dull market, prices on bars and structural shapes have remained firm at 2c., base Pittsburgh, while plates at 1.90c., base Pittsburgh, also show no signs of weakness. In fact, sheets are the only commodity in which mills are willing to grant concessions. Here independent producers have quoted 3c. and 3.85c., base Pittsburgh, on black and galvanized, respectively, in an attempt to secure suffi-

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.00c.
No. 24 black sheets	4.05c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	4.90c.
Structural rivets	3.75c.
Small rivets	65 per cent off list
No. 9 annealed wire, per 100 lb	$3.00
Common wire nails, base per keg	2.95
Cement coated nails, base per 100-lb. keg	3.15
Chain, per 100 lb	7.55
	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in.	$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.	19.00
4-in.	39.00

cient tonnage to keep operations on a fairly good basis. In a few cases these prices are reported to have been shaded $2 a ton. Blue annealed sheets are bringing 2.40c., base Pittsburgh. A nearby mill has been authorized to release a fair-sized tonnage of sheets for an automobile maker in the Detroit district. No improvement in the wire market is noted. Common wire nails are selling at $2.65 per keg, base Ironton or Pittsburgh, and plain wire at $2.50 per 100 lb., base Ironton or Pittsburgh. Fabricators in this district are running on a moderate schedule, but there is little new work of consequence ahead.

Coke.—No transactions of importance have been closed in the past week, and considerable uncertainty regarding beehive coke prices still exists. Many consumers stocked heavily during or immediately preceding the recent flurry in the market, and consequently present buying is on a small scale. Until the situation concerning both furnace and foundry coke prices is clarified, buyers are not likely to make sizable purchases. Wise County foundry coke is being offered at $5.50 to $6 per net ton, f.o.b. ovens. While furnace grades are quoted at $5 to $5.50, foundry coke from the New River district continues at $9, ovens, although a decline of from 50c. to $1 is expected in the near future. The comparatively warm weather for this season of the year has adversely affected the demand for by-product domestic coke. Specifications for by-product foundry coke have fallen off materially.

Based on freight rates of $2.14 from Ashland, Ky., and $2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Wise County foundry, $8.09 to $9.59; New River foundry, $11.59; by-product foundry, $10.14.

Old Material.—There has been no appreciable change in the market. Mills are accepting a limited amount of material on contract, but are not interested in making purchases for forward delivery. Foundry grades are quiet. Prices have not been altered, although there is a tendency toward weakness. Among railroad lists closing this week are the Norfolk & Western, 5600 tons; the Southern, 49,000 tons, and the Virginian, 3300 tons. Included in these tonnages are approximately 4000 tons of steel rails.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$12.50 to	$13.00
Scrap rails for melting	12.50 to	13.00
Short rails	17.50 to	18.00
Relaying rails	26.50 to	27.00
Rails for rolling	14.00 to	14.50
Old carwheels	12.00 to	12.50
No. 1 locomotive tires	16.50 to	17.00
Railroad malleable	14.50 to	15.00
Agricultural malleable	13.50 to	14.00
Loose sheet clippings	7.00 to	7.50
Champion bundled sheets	8.50 to	9.00
Per Net Ton		
Cast iron borings	7.50 to	8.00
Machine shop turnings	7.00 to	7.50
No. 1 machinery cast	17.00 to	18.00
No. 1 railroad cast	14.00 to	14.50
Iron axles	19.50 to	20.00
No. 1 railroad wrought	9.00 to	9.50
Pipes and flues	7.50 to	8.00
No. 1 busheling	9.00 to	9.50
Mixed busheling	5.50 to	6.00
Burnt cast	6.50 to	7.00
Stove plate	9.00 to	9.50
Brake shoes	9.50 to	10.00

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 24 black sheets	4.45c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	5.25c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.30c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
	Per Cent Off List
Tank rivets, ⅞-in. and smaller	70
Machine bolts	50 and 5
Carriage bolts	47½
Lag screws	55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

St. Louis

Pre-Inventory Dullness in Pig Iron and Steel—Bridge Requires 4500 Tons

ST. LOUIS, Dec. 7.—Inquiry for pig iron is limited both for first and second quarter shipment. This is due to the desire to hold down inventories. For the same reason there have been some requests to withhold shipments against contracts. Prices are unchanged. The St. Louis Coke & Iron Corporation's sales of all grades of pig iron in November totaled approximately 35,000 tons. Sales during the past week totaled 3000 tons, of which 1500 tons of basic went to a St. Louis district melter. The remainder consisted of foundry and malleable, 800 tons of which went to Nebraska and Iowa melters and the rest to the St. Louis district.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$22.16
Northern malleable, sil. 1.75 to 2.25	22.16
Basic	22.16
Southern fdy., sil. 1.75 to 2.25	24.42
Granite City iron, sil. 1.75 to 2.25	$22.31 to 22.81

Finished Iron and Steel.—The principal pending project in the construction field is a bridge across the Mississippi River at Cape Girardeau, for which 4500 tons of structural steel and 300 tons of reinforcing bars will be required. Business in structural steel is light with most fabricators. Buying from mills has entered the usual pre-inventory lull. Warehouse business during November was 10 to 15 per cent better than in October, and a good beginning was made the first few days in December.

Coke.—The demand for coke is still good, although not so strong as it has been for the last few weeks. By-product ovens in the district are well sold.

Old Material.—The taking of inventories has not only virtually stopped all buying of old material by consumers, but it also has resulted in many requests to halt shipments against contracts. Railroad equipment orders are in prospect that will improve conditions among industries in this district after the first of the year, but, in any event, it is expected there will be some buying of scrap by users then. Railroad lists include: Missouri Pacific, 5000 tons; Chicago, Milwaukee & St. Paul, 1400 tons; Pere Marquette, 1000 tons; Chicago & Eastern Illinois, 550 tons; St. Louis-San Francisco, 300 tons; Kansas City Southern, 375 tons, and Nickel Plate, 245 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$10.00 to	$10.50
Rails for rolling	15.25 to	15.75
Steel rails less than 3 ft.	16.00 to	16.50
Relaying rails, 60 lb. and under	20.50 to	23.50
Relaying rails, 70 lb. and over	26.50 to	29.00
Cast iron carwheels	14.50 to	15.00
Heavy melting steel	13.00 to	13.50
Heavy shoveling steel	13.00 to	13.50
Frogs, switches and guards cut apart	14.00 to	14.50
Railroad springs	15.75 to	16.25
Heavy axle and tire turnings	10.50 to	11.00
No. 1 locomotive tires	16.00 to	16.50
Per Net Ton		
Steel angle bars	12.00 to	12.50
Steel car axles	17.50 to	18.00
Iron car axles	20.00 to	20.50
Wrought iron bars and transoms	18.00 to	18.50
No. 1 railroad wrought	11.25 to	11.75
No. 2 railroad wrought	11.50 to	12.00
Cast iron borings	9.00 to	9.50
No. 1 busheling	10.00 to	10.50
No. 1 railroad cast	14.25 to	14.75
No. 1 machinery cast	16.50 to	17.00
Railroad malleable	12.25 to	12.50
Machine shop turnings	6.50 to	7.00
Bundled sheets	7.50 to	8.00

An offer for the purchase of a controlling interest in the common stock of the Bessemer Limestone & Cement Co., Youngstown, Ohio, producer of blast furnace fluxstone and cement, at $250 per share, has been accepted by the required 80 per cent of outstanding common. The offer was made for the purchasing group by Wick & Co., investment brokers at Youngstown.

Buffalo

Pig Iron Dull—Better Sheet Specifications —Scrap Suspensions

BUFFALO, Dec. 7.—Demand for pig iron is light, and bookings during the past week have been limited to a few thousand tons in scattered lots, mostly carloads. Prices appear reasonably firm at $19 and $20, Buffalo, for No. 2 plain foundry, but the market has been shaded on some Eastern business in at least one instance, it is believed. Merchant furnaces here are comfortably booked for the next few months, and a period of comparative inactivity is looked for. It is reported here that the Charlotte, N. Y., furnace will shut down about March 1.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25	$19.00 to $20.00
No. 2X foundry, sil. 2.25 to 2.75	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25	20.50 to 21.50
Malleable, sil. up to 2.25	20.00
Basic	19.00
Lake Superior charcoal	27.28

Old Material.—The market is weak, and the production of scrap is dropping off. One mill is holding up shipments indefinitely, and another is holding them up until Dec. 15. Heavy melting steel has softened to $15 to $15.50 and $16.75 to $17.25, depending on the grade. Orders still out will probably hold the market to these figures for some little time. A small tonnage of No. 1 machinery cast was sold for around $16.25. Small lots of knuckles and couplers and short rails have been sold, and a fair-sized tonnage of stove plate has changed hands at $14.75. Short shoveling turnings are scarce, and there is a considerable tonnage of unfilled orders here and at Youngstown. Shoveling turnings are firm at $13.50.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$15.00 to $15.50
Selected No. 1 heavy melting steel	16.75 to 17.25
Low phosphorus	18.00 to 19.00
No. 1 railroad wrought	14.00 to 14.50
Carwheels	16.00 to 16.50
Machine shop turnings	9.00 to 9.50
Mixed borings and turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.50 to 16.00
Stove plate	14.50 to 14.75
Grate bars	12.00 to 13.00
Hand bundled sheets	10.50 to 11.50
Hydraulic compressed sheets	15.50 to 16.00
No. 1 machinery cast	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	13.00 to 13.50

Finished Iron and Steel.—The International Milling Co., Minneapolis, which is erecting a mill in Buffalo, has awarded the contract for the steel in the structure to the Buffalo Steel Co. Specifications call for 650 tons of rail steel. The elevators for the mill will be contracted for separately, and will require about 500 tons, probably of rail steel. The general contract for public school No. 78 taking 250 tons of reinforcing steel has been awarded, and the steel will be placed shortly. The sheet market has improved, and local makers have been quoting on several good inquiries and have been receiving specifications freely. Better releases are coming from the automotive industry, which shows signs of more activity. Prices are holding fairly steady and makers expect No. 24 black to be back on a 3.10c., Pittsburgh, base shortly. The prevailing market is 3c., and 2.90c. has been done on sizable business. The market on galvanized sheets is 3.95c., base Pittsburgh, with $2 per ton less possible on more than carload lots. Sheet mill operations are at 50 to 60 per cent of capacity, but an improvement is looked for within the next ten days. Bars are firm at 2.265c., Buffalo. Bolt contracts are being made at 50, 10, 10 and 5 off to jobbers, for cut-thread machine, and at 50, 10, and 10 off to consumers.

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 24 black sheets	4.30c.
No. 10 blue annealed sheets	3.80c.
No. 24 galvanized sheets	5.15c.
Common wire nails, base per keg	$3.90
Black wire, base per 100 lb	3.90

Boston

Buffalo Pig Iron Prices Are Weaker—By-Product Foundry Coke Higher

BOSTON, Dec. 7.—With one Buffalo district steel company about to blow in a furnace and with another suffering a decline in finished steel business, pig iron is being offered more freely and at price concessions. Requests for New England foundries to make offers on Buffalo iron during the past week resulted in some business being placed for first quarter shipment at $18, base furnace. Other New York State furnaces, as well as western Pennsylvania producers, are endeavoring to do business on a delivered basis equivalent to $18.75, base Buffalo, but with little success. The Mystic Iron Works, for delivery within a small radius of Boston, is quoting $21, base furnace, but concessions running as high as $1.50 a ton, delivered, under New York State furnace prices have been made to western Massachusetts melters. These prices figure back to about $20, on cars, Everett. Eastern Pennsylvania producers, which heretofore have held to $22.50, base furnace, have signified a willingness to accept $22. Price concessions, however, have brought only small orders, sales in the past week falling well under 5000 tons for this territory. The Mystic Iron Works last week turned out 505 tons of iron one day, a new high record for the stack.

We quote delivered prices per gross ton to most New England points as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $6.91 to $8.77 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65 to $26.15
East. Penn., sil. 2.25 to 2.75	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25	22.91 to 23.91
Buffalo, sil. 2.25 to 2.75	23.41 to 24.41
Virginia, sil. 1.75 to 2.25	28.42 to 29.92
Virginia, sil. 2.25 to 2.75	28.92 to 30.42
Alabama, sil. 1.75 to 2.25	26.91 to 28.77
Alabama, sil. 2.25 to 2.75	27.41 to 29.27

Imports.—Receipts of foreign pig iron at this port in November consisted of 700 tons direct from Germany and 1610 tons from other Continental countries, a total of 2310 tons, which compares with 1901 tons in October and 7137 tons in November, last year. Imports for the 11 months ended with November aggregated 56,463 tons, contrasted with 86,856 tons for the corresponding period last year. During November, 19,818 tons of Newfoundland ore was received, whereas in October imports totaled 9902 tons from that country. So far this year 129,737 tons of foreign ore have been received at Boston.

Coke.—Both New England by-product foundry coke producers, the New England Coal & Coke Co. and the Providence Gas Co., have marked up prices 50c. a ton to $13.50, delivered, within a $3.10 freight rate zone.

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons	4.05c.
Squares and flats	4.55c.
Toe calk steel	6.00c.

So far as Connellsville district foundry coke is concerned, some business was put through this week for first quarter delivery at $6, on cars ovens, with the proviso that should no increase in wages be granted coal miners, the price will be $5. At the Everett, Mass., plant of the New England Coal & Coke Co., the new battery of ovens, intended primarily to care for the needs of the Mystic Iron Works, will be lighted on or about the fifteenth of this month, as scheduled.

Cast Iron Pipe.—Manchester, N. H., has awarded approximately 500 tons of 6 to 30-in. pipe to the Warren Foundry & Pipe Co. for spring delivery, the first open business for 1927 to be placed in this territory. There are no municipal inquiries in the market at the moment. Several of the New England gas companies have signified their intention of closing on spring business before the end of December. These negotiations are of a private nature, however. Foreign pipe is cutting very little figure in New England these days because of opposition from labor unions. Prices quoted openly on domestic pipe follow: 4-in., $59.10 a ton, delivered common Boston freight rate points; 6 to 12-in., $54.10 to $55.10; larger pipe, $53.10 to $54.10. A $5 differential is asked on Class A and gas pipe.

Finished Material.—The Carnegie Steel Co. has been awarded 355 tons of steel sheet piling for a Chicopee, Mass., water project. Bookings for first quarter delivery of bars, standard shapes and plates are coming in slowly. Bars and standard shapes are reported as firm at $2.36½ per 100 lb., delivered, and plates at $2.26½. Several thousand tons of reinforcing bar business is pending. Prices on concrete bars are unsettled.

Old Material.—Prices are weak, not so much because of any pressure to sell as because of a lack of business. It is admitted by the leading dealers that New England stocks of scrap on Jan. 1 will be materially smaller than they were on Jan. 1 last. It is further conceded that no improvement in scrap buying can be expected until after the beginning of the new year, since steel mills, with diminishing bookings, are able to supply their old material wants from nearby points. The very top price offered on heavy melting steel today is $11 a ton, on cars, shipping point. Most sales during the past week were at around $10.50. Prices on specification pipe, turnings, borings, mixed turnings and borings, shafting and street car axles have a downward tendency. The market for forged material and skeleton is holding up relatively well. For material consumed in New England plants, the price trend also is downward.

The following prices are for gross-ton lots, delivered at consuming points:

Textile cast	$18.00 to $19.00
No. 1 machinery cast	18.00 to 18.50
No. 2 machinery cast	16.50 to 17.00
Stove plate	13.00 to 13.50
Railroad malleable	19.00 to 19.50

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.50 to $11.00
No. 1 railroad wrought	11.50 to 12.00
No. 1 yard wrought	10.50 to 11.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
Cast iron borings, chemical	10.00 to 10.50
Cast iron borings, rolling mill	8.00 to 8.50
Blast furnace borings and turnings	8.00 to 8.50
Forge scrap	8.50 to 9.00
Bundled skeleton, long	8.00 to 8.50
Forged flashings	8.50 to 9.00
Shafting	15.50 to 16.00
Street car axles	15.50 to 16.00
Rails for rerolling	11.50 to 12.50
Scrap rails	10.50 to 11.00

As a protest against jobber distribution of foreign steel, the Harold McCalla Co., Philadelphia, has circularized the trade to the effect that it handles "only materials manufactured in this country by United States labor." All its invoices will carry the guarantee: "Products of U. S. Labor." The company, in requesting support in the stand, says: "If our country is to continue to enjoy prosperity, and if the people of these United States are to continue living on a higher plane than that of foreign countries, we all must protect those institutions which have been instrumental in bringing about this enviable position."

San Francisco

Pre-Inventory Caution in Steel Market—Local Sheet Mills to Be Moved

SAN FRANCISCO, Dec. 7 (*By Wire*).—Unmistakable signs of pre-inventory caution in steel buying, the placing of 1426 gross tons of rails by the city of San Francisco and further expansion of the Columbia Steel Corporation have been outstanding developments of the week. The situation in regard to prices is unchanged. Occasional reports of price shading in plates and shapes lack confirmation. Of particular interest to local users of sheets is the recent purchase of the Pacific Sheet Steel Corporation, South San Francisco, by the Columbia Steel Corporation. The plant that has been purchased will be moved to Torrance, Los Angeles County, Cal., where the Columbia Steel Corporation operates two open-hearth furnaces and bar and wire mills. Another open-hearth furnace and six sheet mills will be constructed at the Torrance plant. The addition of a third furnace will give the southern California unit of the Columbia Steel Corporation a capacity of 9000 tons of basic steel per month. This will be used in rolling merchant and reinforcing bars, small structural shapes, sheets and wire products.

Shapes.—Fabricated steel lettings for the week total 2160 tons. Fresh inquiry calls for 1665 tons. The largest individual letting, 1500 tons, for a bank building in San Diego, Cal., was taken by the Virginia Bridge & Iron Co.

Cast Iron Pipe.—B. Nicoll & Co. are low bidders on a total of 1893 tons of cast iron pipe required by the city of Los Angeles, and have been awarded 178 tons by Seattle, Wash., and 108 tons by San Diego, Cal.

Rails.—The city of San Francisco has awarded 1226 gross tons of 98, 106 and 129-lb. girder rails to the United States Steel Products Co., and 200 gross tons of 70-lb. standard-section rails and about 270 tons of track bolts, spikes and tie plates to the Bethlehem Steel Co.

Canadian Scrap Market Drags

TORONTO, ONT., Dec. 7.—Local scrap dealers succeeded in closing a few fairly good orders for heavy melting steel and turnings during the week, but, taken as a whole, business is dull. New spot orders and orders against contract are sufficient to keep a fair volume of scrap moving between dealers and consumers. In the Montreal district, dealers report a very light demand for old material, although some shipments have been going to United States buyers. Dealers' buying prices are as follows:

	Toronto	Montreal
Per Gross Ton		
Steel turnings	$8.50	$8.00
Machine shop turnings	8.50	7.00
Wrought pipe	6.00	6.00
Rails	11.00	10.00
No. 1 wrought	11.00	14.00
Heavy melting steel	11.00	9.00
Steel axles	16.00	17.00
Axles, wrought iron	18.00	19.00
Boiler plate	10.00	8.00
Heavy axle turnings	9.00	8.50
Cast borings	8.50	7.50
Per Net Ton		
Standard carwheels	15.00	16.00
Malleable scrap	14.00	14.00
Stove plate	10.00	13.00
No. 1 machinery cast	16.00	18.00

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, ¾-in. to 2¾-in.	3.90c.
Spring steel, ¼-in. and thicker	5.00c.
No. 24 black sheets	4.90c.
No. 28 black sheets	5.15c.
No. 10 blue annealed sheets	4.00c.
No. 24 galvanized sheets	5.65c.
No. 28 galvanized sheets	6.15c.
Common wire nails, base per keg	$3.75
Cement coated nails, 100-lb. keg	3.75
Cement coated nails, count kegs	3.00

COAL TURNED INTO GAS

Better Coal Utilization Through Long-Distance Pipe Line Gas Service

An organization has been formed in Germany to conduct research looking to wider outlets for an oversaturated coal production, according to a report from Trade Commissioner W. T. Daugherty, Berlin. The company, known as the Aktiengesellschaft für Kohlenverwertung (Company for Coal Utilization) is reported to be supported by Ruhr coal producers. The problem of utilizing low-grade coals, not yet suitable for firing, in long-distance gas service, will be considered first, it is said, and, later, long-distance heat service, better coal distillation yields, better dust firing and purchase of new inventions will be subjected to research.

It is said in Germany that little is yet known concerning the solution of technical projects connected with a long-distance gas service. More economical exploitation of the gases from coke plants can be expected. Hitherto, from 40 to 60 per cent of coke oven gases have been returned to the coking process for heating. It is considered feasible to utilize all this gas for long-distance pipe line service and to employ the so-called "weak gas" resulting from re-distillation of the coke to fire the ovens. By this method about 12 per cent of the coke produced would be consumed and plants now being constructed in the Ruhr are reported to be planned to effect this new and more economical use of by-product gas.

Enough Gas Available for 16,000,000 People

A long-distance coke oven gas service is not new in Germany, although its use is said to be relatively insignificant as compared with the available gas supply. For example, in 1925 about 175,000,000 cu. m. of gas were thus served to some 90 communities (in the approximate vicinity of the Ruhr) but the available supply was estimated at about 2,700,000,000 cu. m. The utilization in this case was thus 6.5 per cent. At present about 25 coking batteries deliver a part of their coke oven gas to neighboring communities.

It is estimated in Germany that, after subtraction of the gas served to communities and industrial establishments, the 2,700,000,000 cu. m. available in 1925 could furnish 2,000,000,000 cu. m. of gas from the regenerative ovens available for distribution. Based on a per capita consumption of 120 cu. m. of gas annually. that total would meet the demands of 16,000,000 inhabitants.

RAILROAD EQUIPMENT

Inquiries for 9220 Cars and 105 Locomotives—More Than 15,000 Cars Now Pending

Inquiries for 9220 freight cars during the past week bring the total number of cars to more than 15,000 on which bids will go in this month. The new inquiries are from the Missouri Pacific, for 3220, the Baltimore & Ohio, 3000, Santa Fe, 1800, and Western Maryland, 1200. Other inquiries, previously reported, include 2500 for the Rock Island, 2000 for the Norfolk & Western and 1200 for the Lehigh Valley. Considerable passenger equipment is also pending, and inquiries for 105 locomotives have come from three roads. Details of the week are given below.

Railroad locomotives to the number of 128 were shipped in November, compared with 151 in October and with 106 in November of last year, according to reports received by the Department of Commerce. Of the November shipments 109 were steam and 15 electric locomotives for domestic use, and three were steam and one electric for foreign use. Unfilled orders at the end of November represented 517 locomotives, of which 391 were steam and 27 electric for domestic delivery, while 84 were steam and 15 electric for export.

The Baltimore & Ohio has inquired for 2000 all-steel box cars and 1000 70-ton hopper cars.

The Missouri Pacific's inquiry for 3220 freight cars calls for the following classes of equipment: 750 50-ton box, 500 40-ton box, 750 automobile cars, 500 automobile furniture cars, 250 steel hopper cars, 250 stock cars, 100 gondolas, 100 ballast cars and 20 caboose cars. It is also inquiring for 70 passenger cars.

The Atchison, Topeka & Santa Fe has inquired for 1500 box, 300 gondola, and 58 passenger cars.

The Burlington Refrigerator Express is inquiring for 200 steel underframes and 200 center sill constructions for cars.

The New York Central has inquired for 27 dining cars.

The Chicago, Aurora & Elgin is in the market for 15 interurban cars.

The Pennsylvania Railroad is taking bids on 76 passenger cars.

The Union Pacific has ordered two steel baggage-mail cars from the American Car & Foundry Co.

The Grand Trunk is in the market for 20 locomotives.

The Rock Island is asking for prices on 25 Mikado and 10 Mountain type locomotives.

The Montana, Wyoming & Southern has placed an order for one locomotive with the Baldwin Locomotive Works.

The Santa Fe has made inquiry for 10 Pacific, 10 Mountain, 15 Mikado and 15 Santa Fe type locomotives.

The Western Maryland Railway is inquiring for 1200 cars.

REINFORCING STEEL

Week's Awards Total About 3000 Tons, But Nearly 5000 Tons Is Up for Bids

Made up mostly of small tonnages, the week's total of concrete reinforcing bar awards was slightly over 3000 tons. New projects up for bids reached a total of nearly 5000 tons, including 1500 tons for an office building in Cincinnati. Awards follow:

BOSTON, 200 tons, Keith's Memorial Theater, to Barker Steel Co.

CHICOPEE, MASS., 185 tons, dam and reservoir, to Bancroft-Martin Rolling Mill Co.

FAIRMOUNT, N. J., 250 tons, mausoleum, to Concrete Steel Co.

BUFFALO, 650 tons of rail steel, mill for International Milling Co., Minneapolis, to Buffalo Steel Co.

CHICAGO, 300 tons of rail steel, apartment building at Dearborn and Schiller Streets, to Inland Steel Co.

CHICAGO, 200 tons of rail steel, Lake Shore Towers Apartment, to Calumet Steel Co.

CHICAGO, 350 tons, Shore Line Apartments, to Kalman Steel Co.

LA GRANGE, ILL., 100 tons of rail steel for Nazareth Academy, to Calumet Steel Co.

MAYWOOD, ILL., 180 tons, building for the Public Service Co., to Kalman Steel Co.

ST. LOUIS, 150 tons, apartment house at Vandeventer Avenue and West Pine Boulevard, to Laclede Steel Co.

Inquiries for reinforcing steel bars include the following:

BUFFALO, 500 tons, elevators for International Milling Co., Minneapolis.

BUFFALO, 250 tons, public school No. 78; general contract awarded.

PHILADELPHIA, 240 tons, public school at L and Luzerne Streets.

IRVINE, PA., 190 tons, State highway bridge.

AKRON, OHIO, 400 tons, O'Neal department store.

CLEVELAND, 100 tons, bridge work for Van Sweringen Company.

CINCINNATI, 1500 tons, addition to Union Central Building; general contract to Ferro Concrete Construction Co., Cincinnati.

CINCINNATI, 200 tons, garage for Pogue Co.; bids in.

CHICAGO, 400 tons, apartment building on Pratt Boulevard; Henry Janisch & Co., general contractors.

CHICAGO, 500 tons, apartment building at Sheridan Road and Grace Street; Avery Brundage Co., general contractor.

CHICAGO, 118 tons, apartment building at 2430 Lake View Avenue; Dahl Stedman Co., general contractor.

CHICAGO, 122 tons, Fabrics Building; R. C. Wieboldt Co., general contractor.

CAPE GIRARDEAU, MO., 300 tons, bridge across the Mississippi River for Cape Girardeau Bridge Co.

NORTH KANSAS CITY, MO., 400 tons, elevator for Wabash Railway.

FABRICATED STRUCTURAL STEEL

Awards Total More Than 35,000 Tons, With New Projects Running Above 36,000 Tons

Structural steel contracts for the week make an impressive showing, considering general reports of a decline in this branch of steel business. The total was more than 35,000 tons, in which there is a considerable number of small jobs but also a sprinkling of fair-sized ones. Outstanding are 3700 tons for an addition to the Baldwin Locomotive Works, Eddystone, Pa., and 3000 tons for an office building in Cincinnati. Of pending work totaling upward of 36,000 tons, the largest job is 6000 tons for an office building at Providence, R. I. Awards follow:

BIDDEFORD, ME., 150 tons of plates and steel, water tank and tower, Kennebunk-Kennebunkport and Wells water system, to Pittsburg-Des Moines Steel Co.

WILLIAMSTOWN, MASS., 400 tons, gymnasium for Williams College, to Eastern Bridge & Structural Co.

NEW HAVEN, CONN., 1200 tons, New Haven Trust Co. building, to Levering & Garrigues Co.

NEW YORK, 6550 tons in the following awards as reported to the Structural Steel Board of Trade: Theater, Forty-ninth Street, and New Utrecht Avenue, Brooklyn, garage, Sterling Place, Brooklyn, ice plant, 219th Street and Ninth Avenue, and garage addition, 4172 Broadway, to Levering & Garrigues Co.; two-story garage, Bainbridge Avenue, community house, Bensonhurst, Brooklyn, warehouse and garage, Girard Avenue, five-story apartment building, Tenth Street, Long Island City, and 15-story hotel, 109-115 West Forty-sixth Street, to Harris Structural Steel Co.: St. Joseph's Church, Bronxville, Staten Island Edison power plant, Richmond, charger station, Long Island Railroad, Bay Ridge, Brooklyn, underground passage, Board of Transportation, Canal Street, and Lutheran Hospital, Brooklyn, to McClintic-Marshall Co.; 15-story apartment building, 310-316 West 106th Street, to Taylor-Fichter Steel Construction Co.; 22-story apartment hotel, 109-123 East Fifty-sixth Street, to Hay Foundry & Iron Works.

NEW YORK, 1670 tons, apartment building, 900 West End Avenue, to Bethlehem Fabricators, Inc.

NEW YORK, 300 tons, apartment building, 166-170 West Eighty-first Street, to Dreier Iron Works.

NEW YORK, 100 tons, garage, 3795-3801 Tenth Avenue, to Claremont Iron Works.

NEW YORK, 100 tons, church, Jackson Heights, Queens, to I. Platt & Co.

NEW YORK, 100 tons, garage, Bellevue Hospital, to Kues Brothers.

NEW YORK, 200 tons, loft building, 149th Street and Southern Boulevard, to Kues Brothers.

NEW YORK, 550 tons, building for the Borden Farm Products Co., to Hedden Iron Construction Co.

NEW YORK, 2500 tons, office building, East Fifty-sixth Street, to Hay Foundry & Iron Works.

NEW YORK, 300 tons, addition to Title Guaranty & Trust Co. Building, 176 Broadway, to Hedden Iron Construction Co.

BROOKLYN, 360 tons, warehouse, Fifty-seventh Street and Twentieth Avenue; loft and store building, Hamilton and Third Avenues; community building, Carroll Street, and apartment building, Ocean Avenue and Avenue Q, to Joseph Gaydica Iron Works.

BROOKLYN, 150 tons, Nurses' Home, St. Mary's Hospital, 1250 St. Marks Avenue, to Atlantic Structural Steel Co.

BROOKLYN, 300 tons, motion picture theater, Twenty-second Avenue, West Tenth Street, to Hinkle Iron Co.

WESTBURY, L. I., 250 tons, theater (previously reported as 100 tons), to Elby Structural Steel Co.

WESTBURY, 150 tons, grade school, to Jones & Laughlin Steel Corporation.

SAYVILLE, L. I., 100 tons, Union Free School, to American Bridge Co.

HUNTINGTON, L. I., 100 tons, grade school, to Otto Goess.

MINEOLA, L. I., 150 tons, high school, to a local fabricator.

TROY, N. Y., 1800 tons, bridge for the Delaware & Hudson Railroad, to American Bridge Co.

PASSAIC, N. J., 400 tons, Passaic County Tubercular Sanitorium, to Oltmer Iron Works.

NUTLEY, N. J., 100 tons, Spring Garden School, to Selbach-Meyer Co.

ENGLEWOOD, N. J., 100 tons, garage, to J. K. Cooke & Son.

TRENTON, N. J., 125 tons, mill building, to American Bridge Co.

EDDYSTONE, PA., 3700 tons, building for Baldwin Locomotive Works, to Belmont Iron Works.

PENNSYLVANIA RAILROAD, 700 tons, signal bridges at Chester, Pa., to McClintic-Marshall Co.

HARRISBURG, PA., 225 tons, Soldiers' and Sailors' Memorial Bridge, to Jones & Laughlin Steel Corporation.

PHILADELPHIA, 1100 tons, Overbrook bridge for the Pennsylvania Railroad, to Bethlehem Steel Co.

WILMINGTON, DEL., 700 tons, bascule bridge over Christiana River, to Bethlehem Steel Co.

NORFOLK, VA., 150 tons, power house for Stone & Webster, to American Bridge Co.

CINCINNATI, 3000 tons, addition to Union Central Building; general contract to Ferro Concrete Construction Co., Cincinnati.

NEW ORLEANS, 200 tons, derrick boat hull for T. Smith & Sons, to American Bridge Co.

CHICAGO, 127 tons, sales and service building for the International Harvester Co., to Vanderkloot Steel Works.

CHICAGO, 1180 tons, apartment building at 2430 Lakeview Avenue, to American Bridge Co.

RACINE, WIS., 830 tons, high school, to Lakeside Bridge & Steel Co., Milwaukee.

GREEN BAY, WIS., 175 tons, steel for two hydroelectric plants for Northern Electric Co., to Worden-Allen Co.

MILWAUKEE, 100 tons, warehouse for Eline Chocolate plant, to Worden-Allen Co.

LYMAN, NEB., 800 tons, building for the Great Western Sugar Co., to an unnamed bidder.

ELKO, NEV., 1000 tons, bridges for the Western Pacific, to Virginia Bridge & Iron Co.

LOS ANGELES, 150 tons, bridges for the Union Pacific, to American Bridge Co.

SAN DIEGO, CAL., 1500 tons, bank building, to Virginia Bridge & Iron Co.

OAKLAND, CAL., 435 tons, Glencourt Telephone Exchange Building, to California Steel Co., San Francisco.

KLAMATH FALLS, ORE., 225 tons, Pelican Theater, to Minneapolis Steel & Machinery Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

PROVIDENCE, R. I., 6000 tons, Industrial Trust Co. office building.

NEW YORK, 6100 tons, Hotel Lincoln, Eighth Avenue and Forty-fourth Street; previous estimate, reported last week, was 2500 tons.

ROCHESTER, N. Y., 1500 to 2000 tons, Masonic Temple.

SCRANTON, PA., 1500 tons, Masonic Temple.

ERIE RAILROAD, 300 tons, bridge.

ATLANTIC CITY, N. J., 500 tons, Childs' Restaurant.

WASHINGTON, 250 tons, alterations to the White House.

DECATUR, ALA., 300 tons, mill building.

CHICAGO, 3000 tons, Midland Club.

CHICAGO, 4000 tons, Criminal Courts Building.

CHICAGO, 750 tons, waterworks crib.

WESTERN PACIFIC RAILROAD, 1000 tons, girder span.

PERE MARQUETTE RAILROAD, 2500 tons, car ferry.

CAPE GIRARDEAU, MO., 4800 tons, bridge across the Mississippi River; American Bridge Co. low bidder.

OGDEN, UTAH, 150 tons, round house for the Union Pacific.

PHILADELPHIA, 600 tons, Jewish Hospital.

BELMAR, N. J., 850 tons, bascule bridge over the Shark River.

WOOSTER, OHIO, 150 tons, Pennsylvania Railroad bridge.

AKRON, OHIO, 3000 tons, O'Neal department store.

SAN FRANCISCO, 930 tons, three 80,000-bbl. tanks for the Associated Oil Co.

SAN FRANCISCO, 170 tons, building for the Pacific Bone, Coal & Fertilizer Co.

HONOLULU, 290 tons, auditorium for the McKinley School.

HONOLULU, 275 tons, machine shop and sugar mill for the Hawaiian Pineapple Co.

Reduced Detroit Scrap Production

DETROIT, Dec. 7.—Offerings of waste material for December by the largest producers show a decrease of 60 to 70 per cent below the past several months. No sales involving any tonnage have been recorded and the general tone of the market is weak, without, however, further declines being registered. Melters' stocks of pig iron are very low.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$12.50 to $13.00
Borings and short turnings	9.00 to 9.50
Long turnings	8.00 to 8.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	20.50 to 21.50
Hydraulic compressed	11.75 to 12.25
Stove plate	13.50 to 14.50
No. 1 busheling	11.00 to 11.50
Sheet clippings	7.75 to 8.25
Flashings	10.75 to 11.25

NON-FERROUS METAL MARKETS

The Week's Prices

Cents per Pound for Early Delivery

	Dec. 7	Dec. 6	Dec. 4	Dec. 3	Dec. 2	Dec. 1
Lake copper, New York	13.75	13.75	13.62½	13.62½	13.62½	13.75
Electrolytic copper, N. Y.*	13.37½	13.25	13.25	13.25	13.30	13.37½
Straits tin, spot, New York	69.50	70.00	....	70.50	70.50	71.37½
Lead, New York	7.90	7.90	8.00	8.00	8.00	8.00
Lead, St. Louis	7.65	7.65	7.80	7.80	7.80	7.80
Zinc, New York	7.35	7.35	7.35	7.37½	7.45	7.45
Zinc, St. Louis	7.00	7.00	7.00	7.02½	7.10	7.10

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Dec. 7.—The copper market has turned active with heavy buying, after touching the lowest point of the year. The tin market is quieter, with prices declining. Demand for lead is less and prices have been reduced. Further weakness has developed in zinc, with buying very light.

Copper.—Apparently thoroughly satisfied that electrolytic copper was a bargain at 13.50c., delivered in the Connecticut Valley, consumers came into the market on Friday, Dec. 3, and have been active buyers ever since. It is estimated that up to last night, Monday, close to 50,000,000 lb. had been sold. Most of this went at 13.50c. Today the market is still active, with considerable buying, but the price, which began to stiffen yesterday, is now generally admitted to be 13.62½c., delivered, with possibly one or two sellers shading this 2½ points or so. Producers generally look for a further stiffening of the market, with the 14c. level not far distant. The quotation of Copper Exporters, Inc., remains unchanged at 13.95c., c.i.f. Hamburg. The export market is only moderately active. Lake copper is quoted at 13.75c., delivered.

Tin.—The tin market has turned decidedly quieter, and sales for the week have not exceeded 900 tons. On only one day was there any activity, and that was Dec. 2, when the market opened weak. Late in the day, however, consumers became interested and bought about 500 tons. On all other days the market was decidedly quiet, and yesterday it was almost stagnant, with not more than 100 tons changing hands. Today there has been very little buying, with spot Straits tin quoted at 69.50c., New York. London quotations today were considerably lower than a week ago, with spot standard quoted at £310 5s.; future standard at £298 15s. and spot Straits at £319 15s. The Singapore price today was £308 10s. Arrivals thus far this month have been 790 tons, with 7305 tons reported afloat.

Lead.—The American Smelting & Refining Co. reduced its contract price late yesterday, Monday, from 8c. to 7.90c., New York. The move was something of a surprise, although there had been a few sales by independents under 8c. recently. The market in general is exceedingly quiet, with consumption heavy and producers well booked for December.

Zinc.—Prime Western zinc continues to reveal weakness with the price at the lowest figure in many weeks, although not the lowest for the year. Quotations for today and for the last few days have been 7c., St. Louis, or 7.35c., New York. There is very little demand from galvanizers, who are not as busy as in recent months, but this is a seasonal development.

Antimony.—The market is quiet and a little easier, with Chinese metal quoted at 13.75c., New York, duty paid, for both prompt and future delivery.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c., with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 26.50c. to 27c. per lb., delivered.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig	71.00c. to 72.00c.
Tin, bar	72.50c. to 73.00c.
Copper, Lake	14.50c.
Copper, electrolytic	14.25c.
Copper, casting	13.75c.
Zinc, slab	7.75c. to 8.25c.
Lead, American pig	8.65c. to 9.15c.
Lead, bar	11.15c. to 12.15c.
Antimony, Asiatic	14.50c. to 15.50c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure)	29.00c. to 30.00c.
Babbitt metal, commercial grade	30.00c. to 40.00c.
Solder, ½ and ½	44.00c. to 45.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	76.50c.
Tin, bar	78.50c.
Copper, Lake	14.75c.
Copper, electrolytic	14.75c.
Copper, casting	14.25c.
Zinc, slab	8.50c.
Lead, American pig	8.75c.
Antimony, Asiatic	18.50c.
Lead, bar	10.75c.
Babbitt metal, medium grade	21.75c.
Babbitt metal, high grade	81.50c.
Solder, ½ and ½	44.50c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass	18.87½c. to 19.87½c.
Copper, hot rolled	22.50c. to 23.50c.
Copper, cold rolled, 14 oz. and heavier	24.75c. to 25.75c.
Seamless Tubes—	
Brass	23.75c. to 24.75c.
Copper	24.50c. to 25.50c.
Brazed Brass Tubes	26.87½c. to 27.87½c.
Brass Rods	16.62½c. to 17.62½c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks	12.75c. to 13.00c.
Zinc sheets, open	13.25c. to 13.50c.

Non-Ferrous Metals in Chicago

DEC. 7.—Prices of copper, tin and zinc are lower. Orders for copper are in smaller number and users are resisting the price. The old metal market is dull and without feature.

We quote, in carload lots: Lake copper, 13.85c.; tin, 72c.; lead, 7.90c.; zinc, 7.15c.; in less than carload lots,

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products and on lead full sheets are still holding to the reductions of Nov. 25 and Nov. 4 respectively. Zinc sheets have not changed since July 20.

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass	18.62½c.
Copper, hot rolled	22.25c.
Zinc	11.75c.
Lead (full sheets)	11.75c. to 12.00c.
Seamless Tubes—	
High brass	23.50c.
Copper	24.25c.
Rods—	
High brass	16.37½c.
Naval brass	19.12½c.
Wire—	
Copper	15.62½c.
High brass	19.12½c.
Copper in Rolls	21.12½c.
Brazed Brass Tubing	26.62½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	18⅝c.
Copper, hot rolled	22.25c.
Copper, cold rolled, 14 oz. and heavier	24.50c.
Zinc	12.25c.
Lead, wide	11.25c.
Seamless Tubes—	
Brass	23.50c.
Copper	24.25c.
Brazed Brass Tubes	26⅝c.
Brass Rods	16⅜c.

antimony, 15c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c; copper bottoms, 9.50c.; red brass, 9.25c; yellow brass, 7.50c.; lead pipe, 6.75c; zinc, 4.75c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 16.75c; all being dealers' prices for less than carload lots.

Aluminum Foundry of Electrical Tool Plant Makes Small Castings

Vent wax is used successfully in overcoming blowing trouble in aluminum castings in the new aluminum foundry of the United States Electrical Tool Co., Cincinnati. Some of the castings required in the manufacture of the company's electric drills and aerial grinders are so small that vent wires cannot be utilized. Consequently, vent wax has been substituted. When heat is applied to the core, the wax melts and thereby leaves an opening through which the gases can escape.

Windsor Locks sand is employed in molding the castings. The grains of that sand are so fine that no marks are left on the castings, the amount of polishing and buffing thereby being reduced considerably.

The foundry, which is 25 ft. wide and 70 ft. long, has a production capacity of 2½ to 3 tons a month. It is equipped with a Hansfeld gas furnace of 300 lb. capacity, a medium-sized Hill & Griffith core oven and a Bristol pyrometer for controlling the furnace heat. A Kirk & Blum blower system provides adequate ventilation.

Formerly the company purchased its aluminum castings on the open market. By establishing its own foundry it has succeeded in getting cleaner castings at a saving of 25 per cent. The average weight per casting is 1½ lb., although the weights vary from 1 oz. to 4 lb.

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.00c.	12.75c.
Copper, heavy and wire	10.75c.	11.75c.
Copper, light and bottoms	9.00c.	10.50c.
Brass, heavy	6.75c.	8.25c.
Brass, light	6.00c.	7.50c.
Heavy machine composition	8.50c.	10.00c.
No. 1 yellow brass turnings	8.25c.	8.87½c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	6.50c.	7.00c.
Lead, tea	4.75c.	5.50c.
Zinc	4.25c.	4.75c.
Sheet aluminum	16.50c.	18.50c.
Cast aluminum	16.50c.	18.50c.

Rate on Brass and Copper Ingots Held Unreasonable

WASHINGTON, Dec. 7.—The rate of 23.5c. per 100 lb. on brass and copper ingots, in carloads, from East Liberty (Pittsburgh) Pa., to Detroit is unreasonable to the extent that it exceeds the rate from Baltimore to Detroit, according to Examiner A. S. Parker of the Interstate Commerce Commission. The latter movement, although covering twice the mileage, takes a rate over the Pennsylvania Railroad of 22c. and is protected by a fourth-section order relating to long-and-short haul departures. A proposed rate of 28c. from Baltimore to Detroit is under suspension. The report just made was based on a complaint by the Federated Metals Corporation, Pittsburgh, to which award of reparation is recommended.

Increases Bar Mill Capacity at McDonald Works

At its McDonald works, Trumbull County, Ohio, the Carnegie Steel Co. has completed installation of a 12-in. merchant bar mill, thus completing an original layout of nine mills designed to manufacture different sizes of hoops, bands, strips and bars. The company is also installing electric drives for the bar mills at its Upper Union mills, Youngstown. The McDonald installation gives the Carnegie company a larger capacity for production of steel bars than is provided by the Steel Corporation at any other property.

At Extreme Left Is the Core Oven. Melting equipment is at far end, with the molding floor in the middle. This foundry of the United States Electrical Tool Co. has capacity for 2½ to 3 tons per month.

PERSONAL

W. F. Barrett, who has been made a vice-president of the Union Carbide & Carbon Corporation, New York, became associated with the subsidiary companies of that corporation in 1913, when he was made works manager and chief engineer for the Linde Air Products Co. In 1918 he became vice-president and a member of the board of the Linde company, and was made president in 1925. He also is president of the following subsidiary companies of the Union Carbide & Carbon Corporation; Prest-O-Lite Co., Inc.; Dominion Oxygen Co., Ltd.; Prest-O-Lite Co. of Canada, Ltd.; Union Carbide & Carbon Research Laboratories, Inc.; Carbide & Chemicals Corporation, and Glendenin Gasoline Co. He is a director of the National Carbon Co., Inc., and of the Oxweld Railroad Service Co. Following his graduation from the Sheffield Scientific School of Yale University, Mr. Barrett became a member of the civil engineering staff of the Buffalo, Rochester & Pittsburgh Railroad. In 1905 he became associated with the Ogden Gas Co., Chicago, which, two years later, was consolidated with the People's Gas, Light & Coke Co. He remained with this company until going with the Linde organization. During the war he served the Government in an advisory capacity on gases, and was a member of the War Industries Board.

W. F. BARRETT

G. W. MEAD

G. W. Mead, who has been elected to the board of directors of the Union Carbide & Carbon Corporation, was president of the Linde Air Products Co. from 1912 until 1925, when he was succeeded by Mr. Barrett. Since 1925 he has been chairman of the board of the Linde company. He has been identified with the subsidiaries of the carbide and carbon company since 1906, when he became secretary of the Union Carbide Co. Later he was secretary of the Union Carbide & Carbon Corporation, and from 1917 to 1923 served as treasurer and vice-president of that corporation. He is now a director of the Carbide & Carbon Chemicals Corporation, president and a director of the Carbide & Carbon Realty Co., Inc., and a director of a number of the other subsidiary companies of the carbide and carbon corporation.

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Robert J. Wilson, formerly vice-president and general manager of the Western Steel Products Co., Duluth, Minn., subsidiary of the Marshall-Wells Co., has been made president of the Kempsmith Mfg. Co., Milwaukee, manufacturer of milling machines and other tools. The Kempsmith company is being refinanced with a $200,000 mortgage bond issue, and Mr. Wilson comes to fulfill the plan of reorganization contemplated by this financing. There will also be a new directorate consisting of John W. Kieckhefer, Adolph Wilmanns, John R. Stewart, A. R. Munkwitz, Frank Wollaeger, Jr., John Goetz, Edward E. Leason and the new president. Mr. Wilson was chairman of the board, Western Furnace Co., Duluth, and is a past president of the National Corrugated Metal Culvert Association. He is a graduate of Lawrence College, Appleton, Wis.

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Robert E. Friend, president Nordberg Mfg. Co., Milwaukee, has been elected a director of the National Exchange Bank of Milwaukee. J. E. Friend, his father, was a director of the same bank for many years up to the time of his death in 1912. Robert Friend became associated with the Nordberg company following his graduation from Cornell University in 1908, and was elected president in 1921.

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George Herbert Jones, a director and formerly first vice-president of the Inland Steel Co., Chicago, has endowed the University of Chicago with a gift of $415,000 for a chemical research laboratory. A new building will be constructed to house the laboratory and the first unit will be devoted to fundamental investigations in chemistry both in medical and industrial fields. In addition to being a director of the Inland Steel Co., the donor is president and treasurer of the Hillside Fluor Spar Mines, Chicago, an Illinois corporation organized in 1921. He was one of the founders of the Inland Steel Co.

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Harrison Hoblitzelle, director of purchases and supplies for the Commonwealth Steel Co., Granite City, Ill., was elected a director of the company on Dec. 1. He is 30 years old, and is the youngest member of the company's board. He was graduated from Cornell University in 1917, and joined the Commonwealth staff in November of that year. His father, the late George K. Hoblitzelle, was vice-president and treasurer of the company for many years.

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William R. Fisher has resigned as sales engineer for the St. Louis Structural Steel Co., to join the sales staff of the Builders Iron Works Co., St. Louis, manufacturer of ornamental iron. He is a graduate of the University of Pennsylvania, and was with the Kansas City Structural Steel Co., Kansas City, before joining the St. Louis Structural Steel Co. two years ago.

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J. P. Orum has been made superintendent of the Bessemer rolling mills of the Tennessee Coal, Iron & Railroad Co., Birmingham. He was formerly assistant superintendent, and that position is being filled by F. U. Harris, who was night superintendent.

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James N. Keenan, formerly chief engineer of the H. H. Robertson Co., Pittsburgh, has joined the staff of the American Institute of Steel Construction as a field engineer. C. Alexander Miller, formerly of the faculty of the Case School of Applied Science, Cleveland, joined the staff in a like capacity a few weeks ago. Both men will devote the major part of their time to maintaining close contact with architects, engineers, contractors and others interested in building construction, and will also work with faculties and students in technical schools in an effort to supplement the theoretical training of the schools with practical experience. They will interpret the policies of the institute and call attention to the merits and advantages of steel when such material is the logical one. Mr. Keenan has been actively engaged in construction operation since his graduation from Cornell University in 1909. Prior to his connection with the Robertson company he was engaged in subway construction work in New York, and also worked on such large power projects as the Keokuk, Iowa, development and that of the Mississippi River Power Co. Mr. Miller has had 17 years' experience as draftsman, contracting engineer and teacher. Mr. Keenan will be in the executive office of the institute, 285 Madison Avenue,

New York, and Mr. Miller will be in the institute's engineering department in Cleveland, which is under the direction of Lee H. Miller, chief engineer.

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John B. Smiley, until last year president of Poldi Steel Corporation, New York, has been elected president of the Remington Arms Co., New York, to succeed C. L. Reierson. Mr. Smiley has been associated with the Remington company as chairman of the executive committee and a director since February of this year.

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Louis J. Desparois has been made manager of the equipment plant of the American Radiator Co., at Buffalo. He has been in the service of the company for 34 years, for the last six years as manager of the Kansas City plant. His place at Kansas City has been filled by J. F. Groebe, formerly manager of the company's plant at St. Paul.

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George M. Eaton, recently chief mechanical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, has become associated with the Molybdenum Corporation of America, Pittsburgh, in the capacity of a sales engineer with particular stress on the development of the use of molybdenum steels in the railroad and industrial fields. He will continue to maintain a connection with the Westinghouse company, serving as a consultant on mechanical engineering problems. Mr. Eaton is a native of Worcester, Mass., and a graduate of the Worcester Polytechnic Institute. He joined the Westinghouse company in 1906 after serving for some years with the Newport News Shipbuilding & Drydock Co., Newport News, Va., and the Union Iron Works, San Francisco.

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R. L. Tindal has been appointed purchasing agent for the New York, Chicago & St. Louis Railroad, to succeed W. P. Dittoe. Mr. Dittoe has retired after having served the company continuously for 45 years, and for the last 27 as purchasing agent.

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W. M. Bastable, until recently general sales manager Wilson Welder & Metals Co., Brooklyn, has been appointed manager of the New York office of the Electric Welder Controller Co., Pittsburgh, with offices at 26 Cortlandt Street, New York.

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Herbert Roush-Kolb has been made a sales representative of the Northern Blower Co., Cleveland, with headquarters at 2640 West Philadelphia Avenue, Detroit.

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Orrin H. Baker has been appointed assistant general manager of sales in charge of the rail division of the Illinois Steel Co., succeeding the late P. W. O'Brien. Mr. Baker was born at Hamilton, Ont., in 1885. He was educated in the public schools of Chicago and in 1907 he was graduated in mechanical engineering from the University of Illinois. Upon leaving college he went to work as a chemist at the South Chicago works of the Illinois Steel Co. A short time afterward he was transferred to the Milwaukee works of that company, where he spent five years specializing in blast furnace and rolling mill operation. In 1912 he entered the Chicago sales office. During the war he was on the Pacific coast as a representative of the American Iron & Steel Institute, his duties there involving the allocation of steel for emergency fleet use. In 1919 Mr. Baker returned to the Chicago sales office of the Illinois Steel Co., where he became active in the rail bureau.

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William I. Howland, Jr., has been appointed assistant general manager of sales in charge of the bar division of the Illinois Steel Co., succeeding the late B. E. Hamilton. Mr. Howland was born in Chicago in 1887, was educated in the public schools of that city and later attended several preparatory schools in the Middle West and in the East. He was graduated in 1908 in mechanical engineering from the Sheffield Scientific School of Yale University, and immediately entered the service of the Illinois Steel Co. He soon was made superintendent of electric furnaces at South Works. In 1914 he was transferred to the Chicago office as a salesman of alloy and electric steels. During the war he was located in Washington with the Naval Bureau of Ordnance, where he had charge of gun forgings for the navy. He returned to the sales organization of the Illinois Steel Co. in 1919.

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Henry C. Darby, formerly a salesman with the Kansas City Structural Steel Co., Kansas City, Mo., has joined the Kansas City sales organization of the Inland Steel Co., Chicago.

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William A. Harmon has been made foundry superintendent Crompton & Knowles Loom Works, Worcester, Mass., succeeding the late T. E. Cunningham. Mr. Harmon has been connected with the company's foundry for about 20 years.

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Stanley C. Hope, for several years European representative of the Gilbert & Barker Mfg. Co., Springfield, Mass., has been made second vice-president of the company, a newly created office.

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Francis G. Echols, vice-president and general manager Greenfield Tap & Die Corporation, Greenfield, Mass., has been made a director of the Capitol National Bank, Hartford, Conn., a newly established bank.

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J. E. Lewis, president Harbison-Walker Refractories Co., Pittsburgh, has been elected a director of the Certainteed Products Corporation, Pittsburgh, to succeed the late Hamilton Stewart.

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Thomas W. Kennedy, general manager Mystic Iron Works, Everett, Mass., has been made president of that company to succeed Capt. William E. McKay. Mr. Kennedy will continue to serve as general manager. Captain McKay has been made chairman of the board to succeed James L. Richards.

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Charles L. Reierson, since 1921 president Remington Arms Co., Inc., New York, has resigned. He entered the Remington organization in 1910, having previously been secretary and a director of the Simmons Hardware Co., St. Louis.

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Howard Coonley, president of the Walworth Co., Boston, has been made chairman of the board of Bearium Bearings, Inc., Buffalo.

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John F. Fletcher has been elected vice-president Harbison-Walker Refractories Co., Pittsburgh, to succeed the late Hamilton Stewart. Mr. Fletcher has been associated with the company for 20 years, and prior to his transfer to Pittsburgh, to become assistant to the president, he had been in charge of the company's Birmingham, Ala., plant. W. F. Bickel has been elected treasurer of the company to succeed William Walker, who recently resigned, and Arthur Braun has been made a director to succeed Mr. Stewart on the board.

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Jonathan Warner, former president of the Trumbull Steel Co., Warren, Ohio, is on a trip around the world.

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Arthur H. Young, of Industrial Relations Counselors, Inc., 165 Broadway, New York, has returned from a European trip.

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H. E. Lewis, vice-president Bethlehem Steel Corporation, was the guest of honor at the annual dinner of the Bethlehem, Pa., Chamber of Commerce on Monday evening, Dec. 6.

OBITUARY

JOHN R. MCGINLEY, who died in New York Nov. 29, after an illness of several months, was for many years an active figure in the iron and steel and associated industries of Pittsburgh. He was identified with the late George Westinghouse in the foundation of the company bearing the name of the latter. He served as president R. D. Nuttall Co., now a subsidiary of the Westinghouse Electric & Mfg. Co., for a number of years, and was chairman Pittsburgh Screw & Bolt Co. and its subsidiary, the Gary Screw & Bolt Co., Gary, Ind. He was also president Duff Mfg. Co., Pittsburgh, and chairman Chicago Pneumatic Tool Co., Chicago, until his retirement from active business about five years ago. Mr. McGinley was born in Cresson, Pa., in 1851, and going to Pittsburgh in 1871, was first on the staff of Duff's Business College. Later he went with the Carbon Bronze Co., Pittsburgh.

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JOHN FRANCIS O'NEIL, former president of the Fulton Iron Works, St. Louis, died at his home in that city on Dec. 3, aged 70 years. He was born in Brockport, N. Y., and went to St. Louis in 1888 as general superintendent of the Fulton Iron Works, then at Second and Carr Streets. Later he was made vice-president, and in the reorganization of the company in 1905 became president, resigning in 1917 and serving a year as chairman of the board. In 1918 he organized the O'Neil Iron Works at Buffalo, but had been inactive in business since 1921.

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ALBERT HAMILTON EMERY, inventor of testing machinery, died Dec. 2, at his home in Stamford, Conn. He was born at Mexico, N. Y., in 1834, and was graduated from the Rensselaer Polytechnic Institute. One of his earlier inventions was a testing machine which is yet in use at the Watertown Arsenal. Other of his machines, particularly for use on work where a very high capacity is required, are being used by the Bureau of Standards. He was a fellow of the American Society for the Advancement of Science and a member of the American Society of Mechanical Engineers and the American Society for Testing Materials.

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FRANKLIN CRAWFORD, for 25 years a member of the New York sales force of North & Judd Mfg. Co. and Traut & Hine Co., New Britain, Conn., died in New York on Nov. 29.

To Make Load Tests on Welded Building

A load test demonstrating the principles of design involved in the arc-welded structural steel type of building will be conducted Dec. 15 and 16 at the Sharon, Pa., plant of Westinghouse Electric & Mfg. Co., which is erecting a five-story building of that type at that plant.

The demonstration is open to architects, engineers and others interested. A portion of the third floor of the building, sufficiently large to obtain some complete observations, will be loaded to twice the maximum load for which the floor is designed. It is estimated that 840,000 lb. distributed over an area of 1400 sq. ft. will be required for this test.

Extra for Boiler Rivets Waived

In a notice recently sent out the Townsend Co., New Brighton, Pa., announced that, effective Dec. 3, all cone and button-head boiler and tank rivets would be sold without extra charge for boiler quality, thereby eliminating extra No. 15 of the standard list of rivet extras, which required an advance of 20c. per 100 lb. above the base price.

Ore Shipments This Year Over 8 Per Cent Larger Than in 1925

CLEVELAND, Dec. 7.—Iron ore shipments from the Lake Superior district by water this year were 58,538,193 gross tons, being exceeded in only four previous years, three of which were during the war period, 1916 to 1918. The only other year in which the 1926 record was broken was in 1923, when 59,036,705 tons was shipped. The record movement was 64,734,198 tons in 1916 and the poorest season in recent years was in 1921 when the shipments were only 22,300,726 tons. Shipments in 1925 were 54,081,298 tons, making a gain this year over last of 4,456,895 tons or 8.24 per cent. In 1924 the shipments were 42,623,572 tons.

All-rail shipments last year were 1,436,320 but will run somewhat larger this year, so that the total movement by rail and water will exceed 60,000,000 tons. November shipments were 3,947,694 tons, and there were three cargoes aggregating 22,511 tons shipped this month, all from Michigan ports, the last cargo leaving Marquette Dec. 4. The data for this season and last are as follows:

Lake Ore Shipments by Water, Gross Tons

	Season, 1926	Season, 1925
Escanaba	6,599,597	5,644,278
Marquette	3,417,462	3,487,968
Ashland	7,140,203	6,664,501
Superior	16,476,264	14,560,477
Duluth	18,638,395	17,707,978
Two Harbors	6,266,272	6,016,096
Total	58,538,193	54,081,298
1926 Increase	4,456,895	

Water Shipments of Last Ten Years, Gross Tons

1917	62,498,901	1922	42,613,229
1918	61,156,732	1923	59,036,705
1919	47,177,395	1924	42,623,572
1920	58,527,226	1925	54,081,298
1921	22,300,726	1926	58,538,193

Increased Operations in Mahoning Valley

YOUNGSTOWN, Dec. 7.—Steel production in the Mahoning Valley reflects the irregularities in buying and in the release of specifications. This week, for example, active sheet capacity rebounded to 98 mills in operation, as compared with 68 the preceding week. The Newton Steel Co., suspended one week for repairs and to permit the accumulation of orders, resumed with 16 mills active.

The Youngstown Sheet & Tube Co. reports production at 60 per cent, and the Republic Iron & Steel Co. is operating at 65 per cent.

The Trumbull Steel Co. maintains an operating rate ranging from 85 to 90 per cent, with the Sharon Steel Hoop Co. at 80 per cent. The Trumbull company is operating seven of eight open-hearth furnaces, and all tin mills. Its strip and sheet mills exhibit some intermittency in operations.

The A. M. Byers Co. continues to operate its Girard, Ohio, works at a rate close to normal.

The Youngstown Sheet & Tube Co. has blown out Grace blast furnace in its Brier Hill group, leaving it one active furnace in this complement, one at Hubbard, Trumbull County, and four active at its Campbell plant, in the eastern division.

The Republic company has suspended a stack in its Haselton group, leaving it three active. Clair blast furnace in the Shenango Valley has been banked for repairs to the stoves. The merchant stack of the Stewart Furnace Co., Sharon, Pa., scheduled for resumption in November, has not yet been blown in, owing to trade conditions.

In the Mahoning Valley steel makers look for an active first quarter, judging from prospective demand.

This week the first decline in active steel pipe capacity occurred, with one less mill in action, or 13 under power of 18, against 14 recently.

The Youngstown Boiler & Tank Co. is operating day and night shifts. Other fabricating plants in the Mahoning Valley are active at a 75 per cent rate.

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British Mills Resume as Strike Ends

Ten Blast Furnaces to Go in This Week—Shipyard Demand Large —Belgian Prices Decline—German Activity Unaffected

(*By Cable*)

LONDON, ENGLAND, Dec. 6.

THE coal strike ended officially Nov. 30, and fuel prices have been falling rapidly. Cleveland owners are expecting to blow in about 10 blast furnaces this week, but the entire output will be required by steel works with which they are connected. Consequently, but little tonnage is expected to be available for the market this year.

No. 3 Cleveland is quoted at £4 5s. ($20.61) per ton, and East Coast mixed at £4 10s. to £4 12s. 6d. ($21.82 to $22.42), both for first quarter delivery, but buyers are inclined to delay. Foreign ore is still quiet.

Finished steel makers are heavily sold ahead on ship building material, and some mills are quoting August as the earliest shipment on plates. A few rail mills are sold up to June. Few of the large plants have resumed, and no general resumption is anticipated before mid-January.

Tin plate is easier as a result of cheaper coal. First quarter sales have been made at 22s. per base box and 21s. 9d. per base box would probably be acceptable now for prompt shipment, with December delivery at 21s. 6d. per base box, all f.o.b. works port.

Business is slow, as consumers are awaiting deliveries on existing contracts and there is evidence of greater stability of prices. Makers are not resuming operation of many more mills until the coal situation is more settled. Several mills have been obliged to close, owing to delays in deliveries of foreign steel.

Galvanized sheets are quiet and black sheets continue inactive.

The Clyde output of ships in November was the lowest on record.

Continental markets are quiet, British consumers awaiting the effects of termination of the coal strike. Congestion at Antwerp is acute, and deliveries of European mills are greatly in arrears.

In France there were 154 furnaces in blast on Nov. 1. German Upper Silesian producers expect to have 9 furnaces in blast shortly.

Germany Only Slightly Affected by Strike Ending—To Blow in More Furnaces

(*By Radio*)

BERLIN, GERMANY, Dec. 6.

CESSATION of the British strike is not expected to affect Continental markets for several months. The market continues active with no change in pig iron or steel syndicate prices for December. The steel syndicate retains its rationing of output at 80 per cent of capacity. October production of steel and rolled goods shows further large increases.

The scrap market is active. Demand for domestic ore is greatly improved, as a result of the higher ocean freights.

Buying of semi-finished material, bars, structural steel and medium and heavy gage sheets, is good but bands are weaker.

The engineering industry reports improvement, with a heavy demand for special machines for the automobile industry. The export market was quieter last week but prospects are good.

BELGIAN PRICES SOFTEN

Some Products Maintained—Buyers Expect Decline with Strike Settlement

ANTWERP, BELGIUM, Nov. 20.—The market is practically stationary, but the weak tendency in prices continues. Buyers are more than ever inclined to delay purchasing as long as possible, and a turn of the market is apparently near, with a lower price level almost certain. Settlement of the British coal strike and early resumption of British industry, it is expected in many quarters, will force Continental sellers to a lower level. While a number of mills are beginning to return to the

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British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.85 per £ as follows:

Durham coke, f.o.b..	£1 10s.			$7.27		
Bilbao Rubio ore†..	1 2			5.33		
Cleveland No. 1 fdy. (nom.)	4 10	to £6	0s.	21.82	to	$29.10
Cleveland No. 3 fdy.	4 5	to 5	15	20.61	to	27.88
Cleveland No. 4 fdy.	4 4	to 5	14	20.36	to	27.64
Cleveland No. 4 forge	4 3½	to 5	13½	20.12	to	27.52
Cleveland basic (nom.)	3 15	to 3	15½	18.18	to	18.30
East Coast mixed...	4 10	to 4	12½	21.82	to	22.42
East Coast hematite	4 8			21.34		
Rails, 60 lb. and up	7 15	to 8	0	37.58	to	38.80
Billets	7 10	to 8	15	36.37	to	42.43
Ferromanganese ...	16 0			77.60		
*Ferromanganese ..	15 0			72.75		
Sheet and tin plate bars, Welsh	6 15	to 7	10	32.73	to	36.37
Tin plate, base box.	1 1¾	to 1	2½	5.27	to	5.46
Black sheets, Japanese specifications	15 5	to 15	15	74.11	to	76.53
				C. per Lb.		
Ship plates	7 15	to 8	5	1.67	to	1.78
Boiler plates	10 11			2.28		
Tees	8 5	to 8	15	1.79	to	1.89
Channels	7 10	to 8	0	1.61	to	1.72
Beams	7 5	to 7	15	1.57	to	1.68
Round bars, ¾ to 3 in.	8 5	to 8	15	1.79	to	1.89
Steel hoops	10 10	and 11	0*	2.28	and	2.39*
Black sheets, 24 gage	12 10	to 12	15	2.70	to	2.76
Galv. sheets, 24 gage	17 0	to 17	5	3.68	to	3.73
Cold rolled steel strip, 20 gage, nom.	18 0			3.91		

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)

Foundry pig iron: (a)						
Belgium	£4 5s.	to £4	10s.	$20.61	to	$21.82
France	4 5	to 4	10	20.61	to	21.82
Luxemburg	4 5	to 4	10	20.61	to	21.82
Basic pig iron:						
Belgium	3 14	to 3	15	17.94	to	18.18
France	3 14	to 3	15	17.94	to	18.18
Luxemburg	3 14	to 3	15	17.94	to	18.18
Coke	0 18			4.37		
Billets:						
Belgium	5 5	to 5	9	25.46	to	26.43
France	5 5	to 5	9	25.46	to	26.43
Merchant bars:				C. per Lb.		
Belgium	5 11½	to 5	15	1.21	to	1.25
Luxemburg	5 11½	to 5	15	1.21	to	1.25
France	5 11½	to 5	15	1.21	to	1.25
Joists (beams):						
Belgium	5 12½	to 5	15	1.22	to	1.25
Luxemburg	5 12½	to 5	15	1.22	to	1.25
France	5 12½	to 5	15	1.22	to	1.25
Angles:						
Belgium	5 15			1.25		
¼-in. plates:						
Belgium (nominal)	6 17	to 7	0	1.48	to	1.54
Germany (nominal)	6 17½	to 7	0	1.51	to	1.54
⅜-in. ship plates:						
Belgium	6 7½	to 6	12½	1.40	to	1.44
Luxemburg	6 7½	to 6	12½	1.40	to	1.44
Sheets, heavy:						
Belgium	6 3	to 6	4	1.33	to	1.34
Germany	6 3	to 6	4	1.33	to	1.34

(a) Nominal.

market in search of tonnage, several of the larger plants are still well booked and maintaining their prices. This spotty condition is evident in the various products, sheets and beams being fairly well maintained, while bars, for which there has been little or no demand, are weaker. The immediate future holds little that is desirable for the mills, with lower prices in prospect and costs, including wages, fuel and raw materials, showing marked increases.

Pig Iron.—Unlike the steel markets, pig iron is decidedly firm, despite early settlement of the British strike. Demand is good and prices range from £4 3s. to £4 5s. ($20.12 to $21.60) per ton, f.o.b. Antwerp, for export. As an incentive to the maintenance of prices, a further increase in the cost of coke is expected. The official price is 46 Belgian francs per ton with open market sales up to 51 fr. per ton.

Semi-Finished Material.—The long advance of semi-finished steel has ceased with the end of the British strike near, but prices continue firm, although buyers generally endeavor to obtain lower quotations. In consequence, only a small lot business is being done. Exporters are pressing for lower prices based on settlement of the British strike, but mills have thus far resisted efforts to lower the market. Billets are scarce with small quantities offered at £5 8s. to £5 9s. ($26.19 to $26.43) for 2-in. and £5 6s. ($25.70) for 4-in. Blooms continue at £4 12s. 6d. to £4 15s. ($22.42 to $23.03) and sheet bars at $5 10s. ($26.67) per ton, all f.o.b. Antwerp.

Finished Material.—Buyers, in expectation of an early decline in prices, are not inclined to purchase on present quotations, so that current business is confined to small lots for prompt shipment. Evidences of softness in prices continue to accumulate, but the situation differs with various products. Certain large mills are still well booked with bar business and have advanced their prices to as high as £5 15s. per ton (1.25c. per lb.) but are booking no business at this level. The small business that is being done is not in excess of £5 12s. per ton (1.21c. per lb.). Demand for beams is better and prices have been advanced to £5 12s. and £5 12s. 6d. per ton (1.21c. and 1.22c. per lb.) compared with £5 10s. per ton (1.19c. per lb.), the recent level. As a result of the agreement of Continental makers of wire rods, the rod price has been advanced to £6 2s. 6d. per ton ($30). Consumers, however, have purchased but little at this new price. Corrugated bars are quoted at £6 3s. 6d. per ton ($30.25) and steel hoops at £6 17s. 9d. ($33.70) per ton., f.o.b. Antwerp. Sheets continue firm, the larger mills being out of the market for the present, with business booked for several weeks ahead.

Lake Superior Iron Ore Shipments Declined in November

Iron ore shipments from the Lake Superior regions in November were 3,947,694 tons as compared with 4,257,612 tons in November, 1925. This is a decrease of 309,918 tons or 7.28 per cent this year. The season's shipments to Dec. 1 this year have amounted to 58,516,376 tons, which contrasts with 54,074,081 tons to Dec. 1, 1925. This is an increase for this year of 4,442,295 tons, or 8.22 per cent. The following table gives the November and season shipments by ports and the corresponding figures for 1925 in gross tons:

	November		To Dec. 1	
	1926	1925	1926	1925
Escanaba	627,039	681,041	6,584,650	5,644,278
Marquette	302,361	414,095	3,410,592	3,480,751
Ashland	411,723	462,815	7,140,203	6,664,501
Superior	938,869	1,030,268	16,476,264	14,560,477
Duluth	1,339,719	1,281,822	18,638,395	17,707,978
Two Harbors	327,983	387,571	6,266,272	6,016,096
Total	3,947,694	4,257,612	58,516,376	54,074,081
Decrease	309,918	.....	.....	.....
Increase	.....	.....	4,442,295	.....

The Duluth proportion this year to Dec. 1 was 31.85 per cent of the total shipments, which compares with 32.75 per cent to Dec. 1, 1925. The Great Northern dock at Superior shipped a little more this year than last or 24.97 per cent of the total shipments to Dec. 1 this year as compared with 24.33 per cent to Dec. 1, 1925.

EXPORT TRADE LIGHT

Confined to Large Japanese Companies—Americans Use Welsh Tin Plate Extras For Export

NEW YORK, Dec. 7.—Export business is small, with all foreign markets quiet. There is still a fair volume of inquiry for small lots of tin plate, ranging in size from 100 base boxes to 500 boxes. A large lot, on which bids have been taken, but award not yet made, is from the Nippon Oil Co. and calls for 57,000 base boxes. Another Japanese inquiry, on which bids have been opened but award not yet announced, is the 7800 tons of 100-lb. rails for the Imperial Government Railways. Osaka municipality opens bids Dec. 20 on three miles of 100-lb. rails. Purchasing of sheets by Japanese consumers has practically ceased.

With the civil war in China reaching serious proportions, merchants are apparently not interested in purchasing at present. There have been a few small inquiries for tin plate waste waste, and one exporter to China recently sold a small lot of defective wire rods for shipment to Shanghai.

Tin plate is still quoted for export at $4.80 to $4.90 per base box, f.o.b. Pittsburgh. There is apparently a tendency to adopt the British extras in quoting on export business, making the c.i.f. price with extras from 7c. to 10c. per box less. Two large sellers at present are using this method to a great extent. The British base being a 107-lb. box, the United States extra of 15c. is added to the price of $4.90 per 100-lb. box. From this price of $5.05, the British extra of 12c. or difference between the 100-lb. and 107-lb. box is deducted. From this basis of $4.93 per box, 18c. is added instead of 25c. per box for tin lining and 6c. for wire tying instead of the American extra for strapping of 10c. From the total of $5.17 per box, 2 per cent is deducted for cash and 61c. is added for freight from Pittsburgh to Japan, with ¾ per cent of this total to cover insurance, bringing the total, with British extras used, to about $5.72 per box, c.i.f. Japan, or with American extras, $5.79 per box.

Little Foreign Steel Being Bought

Importers of European steel are not booking the large business that was coming out earlier in the fall, but one representative of a German company reports that November was one of the largest months of the year. There has been a fair volume of business in strip steel and hoops, but demand for bars is light. Prices of imported bars today are 1.80c. to 1.85c. per lb., duty paid, for plain steel, and 1.90c. to 1.95c. per lb. for corrugated bars.

Although Continental prices are slightly lower than recently, an increase of 50c. per ton in the ocean freights somewhat offsets the decline. A further disadvantage in some instances is an advance in charges for American inspection. Cost of inspection has been increased 3d. per ton, so that the charge for superficial inspection is 1s. 6d. per ton. Some inspection companies, however, are maintaining their present rates.

Domestic sales of oak leather belting in October, as reported by the Leather Belting Exchange, representing about 60 per cent of the total product, amounted to 352,255 lb., valued at $592,846, or $1.68 per lb. The figures are lower than those for September or those for a year ago. The September sales were 371,597 lb., valued at $625,026, or $1.68 per lb., while those for October, 1925, were 363,709 lb., valued at $626,307, or $1.72 per lb.

"Nitralloy," a special steel "capable of being case-hardened at low temperature without deformation," is described in a pamphlet issued by the Ludlum Steel Co., Watervliet, N. Y. Reference is evidently made to the new carburizing process developed in Germany, in which nitrogen plays the principal rôle. The Ludlum company recently secured a license to use the process in the United States.

Continuous 42-In. Blooming Mill

(*Concluded from page* 1625)

ceiving end of that table when it is not in operation, and an extension to the broadside will carry them to the run-in table to the 18-in. mill. This mill consists of six stands of horizontal rolls and two edging mills with vertical rolls. In this mill 3⅞-in. square billets will be reduced to 1½-in. x 1½-in. billets and 8-in. x 2-in. slabs will be reduced to 8-in. sheet bars weighing approximately 7 lb. per ft. The 1½-in. billet will be used in a 12-in. spring mill and a 10-in. combination rod mill, both now under construction. The rod mill will roll both steel and copper.

The drive of all mill tables is completely inclosed in cast iron covers and all gears and bearings on the drive side run in oil. Roller bearings are provided on the working side. There are three complete circulating oiling systems for oiling the table and other bearings. The oil, which is filtered and heated to a proper consistency for both winter and summer operation, flows by gravity through the bearings from storage tanks and is pumped back to these tanks.

At the 42-in. mill, scale from the ingot drops into concrete troughs that extend the entire length of the mill and all the water used in the mills flows into the troughs and washes the scale into a scale pit at the side of the ingot run. It is removed from the pit with a clam shell bucket and overhead crane. The crane that serves this pit runs at right angles to the mill craneway; it is located over the area that is provided for a possible future reversing blooming mill and will serve that mill if built. The scale is loaded into hopper cars and taken to the blast furnaces for re-melting.

Motor Drives and Controls

Controls for all auxiliary drives are located on five balconies. Magnetic control is used throughout. There are two control balconies in the soaking pit department for operating the furnace covers, valves and ingot tilters. Control of the ingot-run tables from the soaking pits to the 42-in. mill, the mill tables of these stands and the screw-down motors for the four stands is from the first of two control balconies at the side of the bay overlooking the 42-in. and 32-in. mills. From another balcony the tables of the 32-in. stands, their screw downs and the broadside transfer table are controlled. Control of the disappearing stop and the 600-ton billet shear, its stops and gages, the receding table and the straight edges and "go-devil" of the cooling bed is from another balcony.

One 8000-hp., 240-r.p.m., 13,200-volt, 3-phase induction motor, with phase-wound rotor, drives both the 42-in. and the 32-in. mills. The control gives automatic starting and reversing service, with the usual protective devices. The motor, located in the center of the motor room between the fourth stand of the 42-in. mill and the first stand of the 32-in. mill, drives from both sides through a long line shaft. The shaft on one side drives the 42-in. mill and that on the other side the 32-in. mill. The line shaft drives eight cross shafts through spiral bevel gears. Spur gears on these cross shafts each reduce through another cross shaft which is connected to the mill proper through the necessary universal couplings and pinions. The pinions are of the herringbone type.

The motor room is fully inclosed, well lighted and has white enamel walls and ceilings. The motor and gear housings are enameled. The room is served by a 60-ton traveling crane. From a gallery on one side an unobstructed view can be had of the motor room and the operation of the mill. The room is heated by a washed air system which also will serve the 18-in. billet and sheet bar motor room and the compressor room.

Power is distributed at 13,200 volts from the main power house to the mill substation, located in the 14-in. merchant mill building, where the necessary part of it is converted into 250-volt direct current for all auxiliary drives. From the substation it is delivered to the control balconies through underground ducts.

Control circuits are wired with multiple-conductor train control cable, each wire of which has an identifying outer braid which assists the electrician in locating trouble on the control circuits. The colors on the wires are standardized according to their functions on the controllers. Wires that are carried underground are lead covered, with the proper seal, as a protection against damage to the insulation from moisture.

All mills, mill tables, transfer tables, cooling bed, shears, soaking pit furnaces, ingot-handling equipment and mill drives were designed and built by the Morgan Construction Co., Worcester, Mass. The electrical equipment, including the main mill and auxiliary motors and switchboards, was supplied by the General Electric Co.

Columbia Steel Expansion in Southern California

LOS ANGELES, Dec. 2.—Immediate expansion of the Columbia Steel Corporation mill at Torrance, Cal., will be made to include a battery of six sheet mills and another open-hearth furnace, according to announcement by D. H. Botchford, vice-president and general manager of the company, who is in Los Angeles with N. A. Becker, superintendent of the Columbia mill at Pittsburg, Cal., arranging for the new layout.

"The mills will have a capacity of 3500 tons per month of plain, corrugated, black, galvanized, and blue-annealed sheets, in all widths up to 60 in.," said Mr. Botchford. "The additional open-hearth furnace will give us a total of three furnaces at Torrance with a capacity of 9000 tons of basic steel per month for the varieties of rolled products, including merchant bars, small structural shapes, reinforcing bars, sheets and electric-steel casings."

W. A. Booth is superintendent of the Torrance mill and J. M. Fitzhugh is district sales manager in Southern California and Arizona.

Tennessee Company May Build More Open-Hearth Furnaces

BIRMINGHAM, Dec. 7.—By Jan. 1 all four of the new 140-ton open-hearth furnaces at the Fairfield, Ala., works of the Tennessee Coal, Iron & Railroad Co. will be in operation. Three of them are now producing steel. The four furnaces were built this year and are part of a $15,000,000 development program announced last December. The Fairfield works now has seven open-hearth furnaces in operation, with the eighth to be completed this month. The Steel Corporation has been in need of more steel-making capacity in this district for some time. An announcement that four additional furnaces will be built is looked for.

The Pullman Co., Chicago, in the first quarterly statement ever issued, showed for the three months ended Oct. 31 a net income of $4,893,662 after depreciation, taxes and all other charges, equal to $3.62 a share earned on $135,000,000 of capital stock outstanding. This compares with a net income of $5,801,225, or $4.29 a share in the corresponding period of last year.

Machinery Markets and News of the Works

BUYING IS DEFERRED

Many Tool Users Postponing Purchases Until the New Year

Watch Company Buys 15 Bench Lathes and a Dayton Company Orders Seven Profiling Machines

WITH the inventory period at hand, many manufacturing companies are deferring purchases of machine tools until after the first of the year. The outlook for a large volume December buying is not promising, but inquiries are fairly numerous in some markets, and this lends encouragement to the expectation that an upward swing in buying may come when the plans of manufacturers for 1927 have matured.

Used tools in considerable quantity are being thrown on the market in the pre-inventory clean-up. A list of several hundred machines is being offered by the Neptune Meter Co., Long Island City, N. Y., and other manufacturers are also making an effort to dispose of surplus or discarded equipment.

Most of the buying of new tools has consisted of single machines, but a few fair-sized lots have been bought. The Waltham Watch Co., Waltham, Mass., ordered 15 bench lathes, making a total of 25 it has purchased in the past few weeks, and the Delco Light Co., Dayton, Ohio, which has been a steady buyer during the last few months, has bought seven profiling machines. The C. & G. Cooper Co., Mount Vernon, Ohio, has ordered two large machines.

The Illinois Steel Co. has purchased a fairly large list of tools, the bulk of the business going to a Chicago dealer.

The Mechanical Mfg. Co., Chicago, maker of package car delivery trucks, will spend $200,000 on new shop equipment. The company plans to build 10 trucks a day.

New York

NEW YORK, Dec. 7.

MACHINE tool buying continues to be of moderate volume, and the trade can scarcely look for a change for the better until after the turn of the year. Inquiries greatly outnumber orders, and it is this fact which encourages the trade to look for an upward swing when manufacturers' plans for the new year have matured. A considerable quantity of used tools is being thrown on the market this month; a list of several hundred tools is being offered by the Neptune Meter Co., Long Island City, N. Y., which is receiving sealed bids up to Dec. 15.

Orders of the past week include the following: Central Railroad of Vermont, vertical drilling machine; C. & G. Cooper Co., Mount Vernon, Ohio, 6-ft. vertical boring mill and 44-in. side-head boring mill; paper company at East Millinocket, Me., 72-in. x 48-in. x 14-ft. planer; Beacon, N. Y., tool company, 6-ft. radial drill; Baker-Perkins Mfg. Corporation, White Plains, N. Y., 6-in. spindle horizontal floor boring machine; machinery company at Claremont, N. H., jig borer; can company at San Francisco, jig borer; Delco Light Co., Dayton, Ohio, seven profiling machines; manufacturing company in Chicago, profiling machine; adding machine manufacturer in Detroit, three bench drilling machines; Waltham Watch Co., Waltham, Mass., 15 bench lathes; Sun Tube Co., Hillside, N. J., 13-in. geared-head lathe; a Detroit company, automatic milling machine and a hand milling machine.

The Prest-O-Lite Co., 30 East Forty-second Street, New York, has acquired 15 acres on the Brotherton Road, Oakley, Cincinnati, and contemplates the construction of a new plant to cost close to $300,000 with equipment. It is purposed to have the unit ready for service in the spring.

The Pheoll Mfg. Co., 280 Broadway, New York, manufacturer of screws, rivets, etc., with headquarters at 5700 Roosevelt Road, Chicago, has leased space in Building No. 6, Bush Terminal, South Brooklyn, for a factory branch.

The Richmond Hill Foundry Co., Grand Street, Richmond Hill, Jamaica, N. Y., is reported to be planning to rebuild the portion of its foundry recently destroyed by fire, with loss reported at $75,000 including equipment and stock. William H. Nichols is head.

The Chevrolet Automobile Co., 67 South Lexington Avenue, White Plains, N. Y., local representative for the Chevrolet automobile, is asking bids on general contract for a new two-story and basement service, repair and garage building, 50 x 150 ft., to cost about $80,000 with equipment. C. P. Platt, Mamaroneck Avenue, is architect.

The New York *Evening Journal*, 238 William Street, is having plans prepared for a five-story printing plant, to cost $1,000,000. George B. Post & Sons, 101 Park Avenue, are the architects.

The Columbia Metal Box Co., 246-48 East 144th Street, New York, has filed plans for a three-story building, 100 x 132 ft., to cost about $300,000.

Ward, Kerrigan & Magnuson, 480 Lexington Avenue, New York, architects, have plans under way for a new five-story automobile service, repair and garage building, 100 x 100 ft., at 1097 Brooklyn Avenue, Brooklyn, to cost close to $100,000 with equipment.

The Empire Brick & Supply Co., 103 Park Avenue, New York, has plans for the early construction of a new plant at Stockport, N. Y., where a similar works is now being operated. The project will include a new power plant. Wright P. Goss is chairman of the board.

The Robert Gair Co., 350 Madison Avenue, New York, manufacturer of corrugated boxes and other folding paper containers, is planning the removal of its main plant at 49 Washington Street, Brooklyn, to Piermont, N. Y., where a new factory is now in course of construction. It is expected to make the change in 60 to 90 days.

The Voras Co., 148 Webster Avenue, Long Island City, operating a general iron works, is completing plans for a new two-story plant, 50 x 100 ft., to cost about $25,000. R. L. Lukowsky, 119 Newtown Avenue, is architect.

The Park Central Motors, Inc., 247 Park Avenue, New York, has leased a four-story building, 100 x 100 ft., at 403-11 East Sixty-fifth Street, for a new service, repair and garage building.

The Atlantic Toy Mfg. Co., 25 West Houston Street, New York, has leased a portion of the building at 141 Wooster Street, for a new plant.

Ovens, power equipment, elevating, conveying and other machinery will be installed in the new sixteen-story plant to be erected by the National Biscuit Co., 85 Ninth Avenue, New York, on block bounded by Fourteenth and Fifteenth Streets, Tenth and Eleventh Avenue, to cost $3,000,000 with equipment. Plans have been filed.

Hugo E. Magnuson, 250 Park Avenue, New York, architect, has plans for a new ice-manufacturing plant at 416-26 West 204th Street, for William Peat and associates, to cost in excess of $75,000 with equipment.

The Harrison Bolt & Nut Co., Second Street, Harrison, N. J., has awarded a general contract to William McEvoy, 420 Warren Street, for a two-story addition, 100 x 100 ft.,

to cost about $45,000. J. W. Baker, 111 North Fourth Street, is architect.

The Paragon Electric Corporation, care of Henry W. Trimble, 484 Bloomfield Avenue, Montclair, N. J., recently formed with a capital of 1250 shares of stock, no par value, has acquired the plant and business of the Adams-Morgan Co., Inc., Upper Montclair, manufacturer of radio equipment, in receivership for several months. The new owner plans considerable increase in production.

Kiddie's Metal Toys, Inc., 309 Pine Street, Elizabeth, N. J., has leased a two and three-story factory at Plainfield, N. J., for the establishment of a new plant to give employment to about 250. Possession will be taken early in January. It is understood that the present business will be removed to this location and additional equipment provided.

The Board of Education, Elizabeth, N. J., is said to be planning the installation of manual training equipment in its proposed three-story and basement junior high school on East Scott Place, to cost in excess of $250,000, for which plans are being drawn by H. B. Brady, 333 North Broad Street, architect.

The United States Radium Corporation, 535 Pearl Street, New York, has closed its plant at 412 Alden Street, Orange, N. J., and will place the factory on the market. Production in the future will be carried out at the New York works of the company. C. B. Lee is president.

The Adams Paper Box & Supply Co., 33 Central Avenue, West Orange, N. J., has purchased a two and three-story factory, 75 x 200 ft., at Forest and Tompkins Streets, Orange, N. J., and will remodel for a new plant. The present works will be removed to the new location and increased capacity arranged. The factory at West Orange was recently acquired by the Monroe Calculating Machine Co., 555 Mitchell Street, Orange.

The H. K. Ferguson Co., Cleveland, has been awarded contract for a three-story, 90 x 100 ft., building at Port Ivory, Staten Island, N. Y., for the Procter & Gamble Co., Cincinnati.

The Bergen County Sign Co., Hackensack, N. J., has been incorporated with a capital stock of $100,000 to manufacture metal signs and other display work for advertising purposes. The company is in the market occasionally for angle iron and sheet iron.

The Bayonne Steel Ceiling Co., 219-225 West Nineteenth Street, New York, manufacturer and distributer of steel sheets, metal ceilings, copper, nickel-silver, solder, nails and conductor pipe, has changed its name to the Bayonne Steel Co., Inc.

Buffalo

BUFFALO, Dec. 6.

CONTRACT has been let by the Chevrolet Motor Co., Delavan and Cornwall Avenues, Buffalo, to the John W. Cowper Co., Fidelity Building, for a one-story addition to its assembly plant, 160 x 245 ft., for parts production and service, to cost $250,000 with equipment. Albert Kahn, Marquette Building, Detroit, is architect.

The Walker Vehicle Co., State and Eighty-seventh Streets, Chicago, manufacturer of electric trucks and tractors, has concluded arrangements for the purchase of the Automatic Transportation Co., 2933 Main Street, Buffalo, manufacturer of similar electric-operated haulage equipment, and will consolidate with its organization. It is understood that the Buffalo plant will be continued in operation. The purchasing company has disposed of a note issue of $1,750,000, a portion of the fund to be used for carrying out the merger and for proposed expansion.

The Oswego River Power Corporation, Oswego, N. Y., has arranged for a bond issue of $3,500,000, a portion of the proceeds to be used for extensions and improvements. The company has a hydroelectric power plant on the Varick and Oswego Canals, with capacity of 15,000 hp., to be increased later.

The Board of Trustees, Adams, N. Y., is asking bids until Dec. 15 for a pumping station and other equipment for extensions in the municipal water system. W. T. Field, Watertown, N. Y., is consulting engineer. F. J. Williams is president of the board.

The Rochester West Side Auto Storage, Inc., care of John Strobel, E. & B. Building, Rochester, N. Y., associate architect, is completing plans for a new four-story automobile service, repair and garage building, 90 x 170 ft., to cost $275,000 with equipment. Esenwein & Johnson, Ellicott Square, Buffalo, are architects.

The Binghamton Light, Heat & Power Co., Binghamton, N. Y., has plans for the construction of an addition to its steam-operated electric generating plant at Johnson City to more than double the present capacity. Extensions will also be made in transmission lines for connection with system of affiliated companies operating in Pennsylvania. A bond issue of $1,450,000 is being sold, the majority of the fund to be used for the expansion. W. S. Barstow is president. The company is operated by the General Gas & Electric Co., 50 Pine Street, New York.

Officials of the Solvay Process Co., Solvay, N. Y., are organizing a subsidiary, to be known as the Solvay Corporation, and the division will begin to function Jan. 1, largely for the distribution of the products of the parent company. At the same time, the company will take over Wing & Evans, Inc., 40 Rector Street, heretofore an affiliated organization, and will use it as an operating division for the Solvay Corporation.

New England

BOSTON, Dec. 6.

LOCAL machine tool business the past week was virtually at a standstill and outside centers report similar conditions. There has been some looking around the used tool market by representatives of metal working shops, but bids received on various machines have been far below the dealer's cost, with the result that few transactions were closed. New inquiries are scarce, and those outstanding for a month or longer give no indication of closing this year. The general opinion among machine tool dealers is that there will be little improvement before next spring. Operations in a majority of New England plants probably will be on a decreasing rather than increasing scale, and following Jan. 1 considerable time will be consumed in taking inventory and arranging budgets.

The General Electric Co. has made a reduction of approximately 5 per cent on most lines of stationary motors in sizes from one to 200 hp., and a 10 per cent reduction on some of the most commonly used types of squirrel cage induction motors. A reduction of about 5 per cent on railroad motors and car equipment also has been made.

Bids are being taken for a two-story, 56 x 93 ft., elementary school at Taunton, Mass., to include a manual training department. J. P. Doyle is chairman of the public property commission. McLaughlin & Burr, City Hall, Taunton, are the architects.

The New Departure Mfg. Co., Bristol, Conn., is contemplating the erection next spring of a machine shop. Lockwood, Greene & Co., 24 Federal Street, Boston, are the engineers.

The Pierce-Arrow Sales Corporation, 1065 Commonwealth Avenue, Boston, is asking new bids on a three-story and basement, 100 x 304 ft. salesroom and service station, which may require a small amount of metal-working equipment. Harold Jewett Cook, 438 Delaware Avenue, Buffalo, is the architect.

The Builders Iron Foundry Co., 9 Codding Street, Providence, R. I., has rejected all bids for a proposed one-story foundry and a new project is under consideration. Z. Chafee is president and treasurer. K. C. Richmont, 10 Weybosset Street, is the architect.

Contingent with a change in the zoning laws in Hartford, Conn., the White Co., maker of motor buses, will construct a $250,000 sales and service plant on Maple Avenue.

The Underwood Computing Machine Co., Hartford, Conn., affiliated with the Underwood Typewriter Co., has notified the Hartford Industrial Development Co. that during the first week in January, 1927, it will exercise an option on a four-story, 50 x 317-ft. plant on Park, Arbor and Orange Streets, erected in 1917, and two one-story units, 35 x 55 ft., and 50 x 129 ft., respectively.

The H. O. Rogers Silver Co., Taunton, Mass., manufacturer of silver and plated ware, is considering the rebuilding of the portion of its plant destroyed by fire Nov. 29, with loss reported in excess of $50,000 including equipment.

The C. F. Church Mfg. Co., Holyoke, Mass., manufacturer of plumbers' woodwork products, has begun the erection of two one-story additions to its plant at Willimansett, Mass., 40 x 168 ft., and 45 x 46 ft., respectively, for which a general contract recently was let to the E. F. Carlson Co., Holyoke. Work is also in progress on an addition to the branch mill at Brattleboro, Vt.

Fire, Dec. 2, destroyed three buildings at the plant of F. H. Appleton & Son, Inc., Franklin, Mass., including a main three-story structure, used for rubber reclaiming, electrical tape manufacture, etc., and power house, with loss

The Crane Market

THE volume of current inquiry for overhead traveling cranes is not large, but with a considerable number being postponed until after the first of the year, January promises to be fairly active. There is very little inquiry for locomotive cranes. Among the current overhead inquiries is a request for offers of a used 15-ton, 58-ft. 3-in. span, 3-motor overhead crane from the Stanley Works, New Britain, Conn. The crane is for installation at the American Tube & Stamping Co. in Bridgeport, Conn.

Among recent purchases are:

Stevens & Wood, Inc., 120 Broadway, New York, a 20-ton, 1-motor, overhead crane for shipment to Alaska, reported purchased from the Whiting Corporation.

Nickel Plate railroad, sixteen 2-ton hand power cranes with electric hoists, through Manning, Maxwell & Moore, Inc., from the Chisholm-Moore Mfg. Co.

Santa Fe Railroad, fourteen 5-ton hand power cranes with electric hoists through H. Channon Co., Chicago, from the Chisholm-Moore Mfg. Co.

Walter Kidde & Co., 140 Cedar Street, New York, two 10-ton, 35-ft. and 42-ft. span, 3-motor overhead cranes for the Safety Cable Co., Bayonne, N. J., reported purchased from the Shaw Electric Crane Co.

Pullman Car & Mfg. Corporation, Chicago, eighteen 5-ton hand power cranes with electric hoists for three plants, through the H. Channon Co., Chicago, from the Chisholm-Moore Mfg. Co.

Ste. Anne Pulp & Paper Co., Ste. Anne de Beaupre, Que., two electric, four pneumatic and three hand power cranes and several chain blocks and trolleys from the Herbert Morris Crane & Hoist Co., Niagara Falls, Ont.

Canada Paper Co., Windsor Mills, Que., a 10-ton electric traveling crane from the Herbert Morris Crane & Hoist Co.

Asbestos Corporation of Quebec, two 15-ton hand power cranes from the Herbert Morris Crane & Hoist Co.

St. Louis Coke & Iron Corporation, Granite City, Ill., a 7½-ton, 140-ft. span, hammer-head crane, with 35-ft. cantilevers at each end, from the Whiting Corporation.

reported at close to $200,000 with equipment. It is planned to rebuild.

Several machine tools will be installed at the Portsmouth, N. H., Navy Yard, for which the Bureau of Supplies and Accounts, Washington, is asking bids until Dec. 14, including two motor-driven combination drill press and lathe milling machines, two sets of electrical spares, and two auxiliary boring bar attachments for engine bearings, schedule 6379.

Mills of the American Writing Paper Co., Holyoke, Mass., at Unionville, Manchester and Windsor Locks, Conn., will be offered at a public sale at Holyoke, Dec. 28, under foreclosure proceedings. The court has instructed that not less than $80,000 shall be considered for the first noted property, $50,000 for the Manchester mills, and $250,000 for the Windsor Locks plant. S. L. Wilson, special master, is in charge.

Philadelphia

PHILADELPHIA, Dec. 6.

PLANS have been filed by the Philadelphia Rapid Transit Co., 810 Dauphin Street, Philadelphia, for a new service, repair and garage building at Forty-first and Chestnut Streets, to cost $100,000. A power house will also be built. The company is completing a similar structure at Penn and Comly Streets, with capacity of more than 100 buses.

The Cable Excavator Co., Fernwood, Delaware County, Pa., has been making inquiries for a lattice boom and clamshell bucket, about ¾-yd. capacity, dipper type, and front drum for a Marion type No. 21 steam shovel.

Max A. Bernhardt, 127 South Eighteenth Street, Philadelphia, architect, has filed plans for an eight-story automobile service, repair and garage building, 65 x 125 ft., at 819-23 Walnut Street, to cost $200,000.

The Belmont Iron Works, Twenty-second and Washington Streets, Philadelphia, has filed plans for the construction of a new crane runway.

The new plant of the Philadelphia Motor Service Co., Nineteenth and Buttonwood Streets, Philadelphia, will be located on Columbia Avenue, between Front and Blair Streets. It will be four stories, 110 x 180 ft., estimated to cost $300,000 with equipment, instead of a smaller sum, previously noted. Andrew J. Sauer & Co., Schaff Building, are architects and engineers.

The A. Brown Co., 145 Fairmount Avenue, Philadelphia, contractor, has received a general contract for a new automobile service, repair and garage building at 4730-34 Baltimore Street, to cost $115,000.

The City Commission, Atlantic City, N. J., has tentative plans for a new pumping plant, to consist of from one to three electrically-operated pumps and auxiliaries, for high-pressure salt water service. Commissioner Kuehnle is interested in the project.

The Triple Arc Lamp Co., manufacturer of special lamps for motion pictures, has established an assembling plant at 17 East State Street, Trenton, N. J., transferring operations from New York to this place. The company is considering plans for expansion, to provide for complete manufacture as well as assembling.

The Empire Tool Corporation, Gloucester, N. J., has taken over the former tool works and plant of the John M. Rodgers Co., Monmouth and Ellis Streets. Facilities will be provided for extensive production.

Fire, Nov. 30, destroyed the boiler and power house at the Otto Colliery, Branchville, near Pottsville, Pa., of the Philadelphia & Reading Coal & Iron Co., with loss reported in excess of $300,000 with equipment. It is proposed to rebuild.

The Pottstown Pipe Products Co., Pottstown, Pa., manufacturer of iron pipe, has plans for a one-story addition, 56 x 75 ft.

The Williamsport Wire Rope Co., Williamsport, Pa., is said to be planning the construction of an addition to its factory branch at Chattanooga, Tenn., to cost in excess of $30,000 with equipment. F. R. Saunders is manager for the company at Chattanooga.

The Atlas Powder Co., Wilmington, Del., will proceed with extensions and improvements in its plant near Tamaqua, Pa., to include the erection of new units for cap, fuse and kindred production. A new steam power house will be built. The expansion program will cost in excess of $200,000 with equipment.

The Altoona School District, Sixth Avenue and Fifteenth Street, Altoona, Pa., W. M. Decker, secretary, is said to be planning the installation of manual training equipment in the proposed addition to the senior high school, to cost about $375,000. Hersh & Sholler, Commerce Building, are architects. Frank Irving Cooper, 172 Tremont Street, Boston, is consulting architect.

The Keeley Stove Co., Columbia, Pa., has plans for a three-story addition to cost in excess of $50,000 with equipment.

The Alloy Steel Corporation, 1016 Peoples Bank Building, Philadelphia, has been organized with a capital of $25,000 as a sales and engineering organization. The company plans to establish a warehouse and fabricating plant at Camden, N. J., next year.

Pittsburgh

PITTSBURGH, Dec. 6.

MACHINE tool sales in this district have been light, but the present condition of the market compares favorably with the same period in recent years. Considerable business has been budgeted for 1927 and many appropriations have been made.

The West Penn Power Co., West Penn Building, Pittsburgh, is disposing of a new issue of preferred stock to total $1,000,000, a portion of the fund to be used for extensions and improvements and general financing.

The Guarantee Liquid Measure Co., Rochester, Pa., manufacturer of gasoline pumping equipment, is having plans completed for a new power house. The company has recently awarded a general contract to the Rust Engineering Co., 311 Ross Street, Pittsburgh, for a new plant building. The entire project will cost in excess of $800,000 with machinery.

The West Virginia Southern Coal Co., care of the Equitable Trust Co., Munsey Building, Baltimore, corporate trustee, has been organized to take over and consolidate nine coal mining companies operating in the Kanawha and Logan fields, W. Va., with total valuation placed at $4,700,000. The new company plans expansion and the installation of power equipment and mining machinery in a number of mines. A bond issue of $1,350,000 has been arranged. Everett Drennen, formerly connected with the West Virginia

Coal & Coke Co., Elkins, W. Va., will be president of the new organization; and Walter H. Cunningham, former general manager of the West Kentucky Coal Co., vice-president.

The Westinghouse High Voltage Insulator Co., Derry, Pa., has plans for a one-story addition, 100 x 440 ft., to cost close to $100,000 with equipment. The company is affiliated with the Westinghouse Electric & Mfg. Co., East Pittsburgh; Bernard H. Prack, Martin Building, Pittsburgh, is engineer.

Officials of the Pittsburgh & West Virginia Gas Co., 435 Sixth Avenue, Pittsburgh, have organized a subsidiary, the Pittsburgh & West Virginia Pipe Line Co., capitalized at $1,000,000, to construct and operate a pipe line for natural gas service from the Kentucky coal fields to southern West Virginia and western Pennsylvania. The entire project is reported to cost in excess of $500,000.

The General Cement Products Co., Magee Building, Pittsburgh, has been organized with a capital of about $1,000,000 to take over and consolidate four companies in this section specializing in the production of cast concrete and cement building products. Plans are under way for expansion. Robert G. Campbell is president; John E. Crawford, treasurer and C. J. Herzog, vice-president and manager of production.

The name of the American Nickel Corporation, Clearfield, Pa., has been changed to the American Mond Nickel Co., effective Dec. 1.

South Atlantic States

BALTIMORE, Dec. 6.

PLANS have been authorized by the Potomac-Edison Co., Cumberland, Md., for enlargements in its steam-operated electric generating plant at Williamsport, Md. A 40,000-hp. turbo-generator and accessory equipment will be installed to double the present output. The expansion will cost close to $500,000. M. F. Riley is president.

The Hohenau Production Corporation, Wilmington, Del., Walter Hohenau, president, recently organized under State laws, is planning the establishment of a local plant for the manufacture of hydrogen gas machinery. It is said that property will be leased for the initial works, with construction of an entirely new plant later. Production is expected to begin in 60 to 90 days. A branch plant is projected at Houston, Tex.

The Atlanta Coach Co., Atlanta, Ga., operating a motor bus line, subsidiary of the Georgia Railway & Power Co., Electric & Gas Building, has plans for a new service, repair and garage building, 115 x 250 ft., to cost in excess of $100,000 with equipment. Work will start early in the new year.

The E. H. Jacobs Mfg. Co., Danielson, Conn., manufacturer of textile mill equipment, is completing plans for a branch factory for loom supplies and affiliated equipment at Charlotte, N. C., to be ready for service in January.

The Warren Motor Co., Washington, N. C., is planning the installation of equipment for repair and parts work on Dodge automobiles, which the company represents.

The Department of the Interior, Washington, is arranging specifications for power and irrigation projects in the West to cost about $97,000,000, the majority of work covering completion of present projects, to be carried out during the coming year. The majority of the work will be conducted through the office of the Reclamation Service, Denver, Colo.

Property of the Pusey & Jones Co., Wilmington, Del., including shipways, buildings, machinery, tools, etc., will be offered at public sale by the receivers, Willard Saulsbury and Charles B. Evans, on the premises, Jan. 5.

W. H. Bradley, 219 Grant Building, Atlanta, Ga., is in the market for a gasoline shovel, about ¾-yd. capacity, crawler type, late model.

The Perfection Stove Co., 7609 Platt Avenue, Cleveland, has leased property at 908 North Seventeenth Street, Richmond, Va., and is said to be planning the early establishment of a new factory and distributing branch at this location. The company is a subsidiary of the Standard Oil Co., 26 Broadway, New York, specializing in the production of oil stoves.

The Bernhardt Chair Co., Lenoir, N. C., is considering the early rebuilding of the portion of its plant destroyed by fire Nov. 30, with loss estimated in excess of $300,000 including equipment.

The Hercules Powder Co., du Pont Building, Wilmington, Del., will build a new power house at its plant at Brunswick, Ga., in connection with expansion in the mills. The entire program will cost about $280,000 with machinery.

The Roanoke Ice & Cold Storage Co., Roanoke, Va., will proceed with the immediate erection of its proposed ice-manufacturing plant addition, 96 x 100 ft., to cost in excess of $75,000 with machinery. The cold storage capacity will also be increased. George W. Hutchinson, Express Building, is architect.

The American Stores Co., 424 North Nineteenth Street, Philadelphia, plans the installation of elevating, conveying, loading and other equipment in its proposed new storage and distributing plant at Baltimore, to cost about $115,000.

The City Council, Newton, N. C., will ask bids early in January for equipment for the municipal waterworks, including motor-driven centrifugal pumping units and accessories, power transmission line, pipe and fittings. Spoon, Lewis & Camp, Greensboro, N. C., are consulting engineers.

The National Fuel Corporation, Liberty Trust Building, Roanoke, Va., is establishing a new coal storage and distributing plant and contemplates the purchase of a portable conveyor, loader and other equipment.

The Appalachian Electric Power Co., Bluefield, W. Va., is said to be concluding arrangements for the purchase of the municipal electric light and power plant at Martinsville, Va., and plans extensions and improvements in this section.

The Atlantic Coast Line Railway Co., Wilmington, N. C., has begun the construction of a new automatic electric coaling station at Thomasville, Ga., with capacity of 500 tons, to cost in excess of $125,000. J. E. Willoughby is chief engineer.

F. J. McGuire, Durham, N. C., is in the market for a stationary mixer, either gas or electric drive.

Cincinnati

CINCINNATI, Dec. 6.

LOCAL machine tool builders report a moderate volume of sales the past week, the bulk of the orders consisting of single machines from widely diversified sources. The usual letdown at the end of the year is in evidence, but the falling off in activities is less than in previous years. Production in Cincinnati manufacturing plants has not been seriously affected by the recession in sales, and unfilled orders still are at a satisfactory level. The Norfolk & Western Railroad is understood to have closed for a considerable amount of the equipment on its list, while the Illinois Steel Co. has contracted with a builder in this district for planers and boring mills.

A Maine paper company has bought a 72-in. x 48-in. x 14-ft. planer. The New York Central has taken a 27-in. x 16-ft. lathe for its West Albany, N. Y., shops, and the Baker Perkins Co., Saginaw, Mich., has purchased a 6-in. spindle floor borer. The C. & G. Cooper Co., Mount Vernon, Ohio, has bought a 72-in. heavy boring mill and a 36-in. sidehead boring mill. An agricultural implement manufacturer has placed an order for four large automatic lathes with a Cincinnati company. Sales to automobile companies have been confined principally to one or two machines for replacement.

The Delco Light Co., Dayton, Ohio, has awarded a general contract to the Danis-Hunt Co., local, for a brick and concrete building in the rear of the power house at Moraine City, the site of the company's new factories. The building will house machinery for the handling of coal and will distribute the coal in pulverized form to the automatic stokers in the power house.

The Dayton Structural Steel Co., Howell and Parker Avenues, Dayton, Ohio, has acquired seven acres on Springfield Street, North Dayton, for expansion. No plans for any new construction of a new fabricating plant yet have been made. J. A. Burger is president.

The Chevrolet Motor Ohio Co., Norwood, Cincinnati, has awarded a general contract to the Ferro Concrete Construction Co., for a one-story addition, 120 x 275 ft., for service and parts work, to cost $100,000 with equipment. Headquarters of the company are at Detroit. Albert Kahn, Marquette Building, Detroit, is architect.

The Moore & Culligan Co., 270 Union Street, Memphis, Tenn., manufacturer wrought iron products, has leased a new building to be erected by the Linden Development Co., and plans the removal of its business to this location. The present output will be increased. George Mahan, Jr., American Bank Building, is architect.

The United States Cast Iron Pipe & Foundry Co., Twenty-seventh and Boyce Streets, Chattanooga, Tenn., is reported to be planning an addition to its foundry, to cost in excess of $200,000 with equipment. Headquarters are at East Burlington, N. J.

The Hanson-Warden Co., Dermon Building, Memphis, Tenn., has been awarded a general contract for a new service, repair and garage building to cost $100,000, to be occupied

under lease by the Studebaker Sales Corporation, Memphis. E. L. Harrison, Fidelity Bank Building, is architect.

The Board of Education, Denton Building, Cincinnati, is reported to be planning the installation of manual training equipment in its new three-story and basement Walnut Hills high school, estimated to cost $1,000,000, for which plans are being drawn by Garber & Woodward, 4 West Seventh Street, architects.

The Miami Paper Co., Carrollton, Ohio, has plans under way for extensions and improvements in its mill at West Carrollton, including the installation of additional equipment, to cost in excess of $85,000. V. D. Simons, 431 North Michigan Avenue, Chicago, is engineer. W. W. Sunderland is president.

The R. K. LeBlond Machine Tool Co., Cincinnati, is now represented in southern California by the Eccles & Davis Machinery Co., Inc., 320 South San Pedro Street, Los Angeles. The C. F. Bulotti Machinery Co., 829 Folsom Street, San Francisco, will represent the LeBlond company in the northern part of the State.

Chicago

CHICAGO, Dec. 6.

SALES of machine tools are fairly numerous, but mostly represent the placing of tools which have been before the trade for some time. Fresh inquiry continues light and with old quotations well closed dealers are not looking for much activity this month. Reports of price advances are still heard, but formal announcements have not yet been made. The Illinois Steel Co's list has been closed, the bulk of the business having been taken by one dealer.

An electrical equipment manufacturer in Chicago has bought a 16-in. x 6-ft. lathe. The A. O. Smith Corporation, Milwaukee, has purchased a grinder and the International Harvester Co., Moline, Ill., has been buying a machine here and there to complete its shop equipment. The Mechanical Mfg. Co., Chicago, maker of package car delivery trucks, will spend $200,000 for new equipment. It plans to build 10 gasoline-engine driven trucks per day.

The Matchless Metal Polishing Co., 840 West Forty-ninth Place, Chicago, will build a one-story brick factory, 42 x 78-ft. Gust. Nelson, 6758 Lowe Avenue, Chicago, has the contract.

The H. F. Watson Co., 5333 South Western Avenue, Chicago, will build a one story boiler house, 52 x 58 ft. to cost $21,000. Johnek & Elman, 140 North Dearborn Street, are the architects.

Theodore Geissman & Co., 624 South Michigan Boulevard, Chicago, have been appointed district sales agents for the Keystone Steel & Wire Co., Peoria, Ill., maker of wire nails, smooth wire and miscellaneous wire products.

The American Steel Foundries, 410 North Michigan Avenue, Chicago, have purchased the Verona Steel Castings Co., Verona, Pa., from the Standard Steel Car Co. and will operate the property.

The Harper Refining Co., 15 North River Street, Aurora, Ill., will proceed with the erection of a new one-story oil refinery, 100 x 100 ft., at Elgin, Ill., to cost about $75,000 with equipment. Herbert E. Spieler, Graham Building, Aurora, is architect.

The King Pneumatic Tool Co., 1735 Armitage Avenue, Chicago, has awarded a general contract to the Chicago Industrial Construction Co., 53 West Jackson Boulevard, for its one-story plant, 90 x 108 ft., estimated to cost $35,000. H. E. Gallup, 646 North Michigan Avenue, is architect.

The Otter Tail Power Co., Fergus Falls, Minn., is disposing of a bond issue of $1,300,000, a portion of the proceeds to be used for extensions and improvements, including the acquisition of additional properties. Vernon A. Wright is president.

The Northern Pacific Railway Co., 176 East Fifth Street, St. Paul, Minn., has plans under way for a new one-story steam-operated electric power plant at Mandan, N. D., to cost about $100,000 with equipment. It is purposed to ask bids in about 60 days. O. M. Rognan is company architect.

The Zonolite Co., Libby, Mont., E. N. Alley, general manager, is planning the installation of an aerial tramway at its local mining properties.

The National Aluminum Mfg. Co., 107 Main Street, Peoria, Ill., has awarded a general contract to the Fred Harbers Co., Central National Bank Building, for a new one-story foundry, 80 x 150 ft., to cost $30,000. J. H. Bickles is secretary.

The Williston Coal & Ice Co., Williston, N. D., is planning to rebuild its coal tipple including loading apparatus and other equipment, recently destroyed by fire.

The Chicago & Northwestern Railway Co., 226 West Jackson Boulevard, Chicago, will soon begin the construction of a new ice-manufacturing plant at Clinton, Iowa, to cost close to $50,000 with equipment.

The Great Western Sugar Co., Sugar Building, Denver, Colo., will proceed with the construction of a new beet sugar refinery at Lyman, Neb., to cost close to $1,000,000 with equipment. The plant will include a power house and machine shop. Edwin Morrison is chief engineer and general superintendent.

The Central West Public Service Co., Sioux City, Iowa, affiliated with the McGraw Electric Co., same place, is disposing of a bond issue of $1,800,000, a portion of the proceeds to be used for extensions and improvements, including the acquisition of additional properties. W. N. Albertson is president.

Detroit

DETROIT, Dec. 6.

THE Panyard Machine & Mfg. Co., 743 Beaubien Avenue, Detroit, manufacturer of piston rings, etc., has acquired more than 8 acres at Muskegon, Mich., for its proposed new plant, to be one and two stories, 120 x 165 ft. and 35 x 130 ft., respectively, to cost approximately $60,000. It is said that other units will be built later. Vanderwest & Child, Montgomery Building, Muskegon, are architects. F. C. Tesmer is secretary.

The Oakland Motor Car Co., Pontiac, Mich., has superstructure under way for its new assembly plant, totaling about 30 acres of floor area, to cost in excess of $5,000,000 with machinery.

The Watervliet Paper Co., Watervliet, Mich., will carry out an expansion and improvement program at its mill to cost about $750,000. Additional equipment soon will be installed.

The New York Bed Spring Mfg. Co., 638 Brady Avenue, Detroit, is having plans drawn for a new two-story factory, 65 x 100 ft., to cost approximately $50,000 with equipment. I. M. Lewis, Congress Building, is architect.

The American Brass & Iron Co., Detroit, has arranged for the removal of its plant from 6425 Crystal Street to the Twelfth Street Terminal Building, where additional facilities will be provided for enlarged output.

The Studebaker Corporation, South Bend, Ind., has awarded a general contract to the H. G. Christman Co., Stevens Building, Detroit, for a one-story addition to its Detroit plant, to cost about $50,000.

The Westerlin & Campbell Co., 1113 Cornelia Avenue, Chicago, and 6022 Fourteenth Street, Detroit, engineer, is completing plans for a new one-story ice-manufacturing plant at Detroit for a company whose name is temporarily withheld. It will be 105 x 130 ft., and cost about $75,000 with equipment.

The Buick Motor Car Co., Flint, Mich., has filed plans for the second of six buildings to form its new gray iron casting unit. It will be one-story, equipped for sand-blasting and cleaning service, estimated to cost $275,000. Work on the third foundry building will soon begin. The entire project is reported to cost about $5,000,000.

The Ternstedt Mfg. Co., 6307 West Fort Street, Detroit, manufacturer of automobile body hardware, has awarded a general contract to J. A. Utley, for a one and two-story addition to cost in excess of $500,000 with equipment. The company is affiliated with the Fisher Body Corporation.

The Piston Service Co., 1228 Michigan Avenue, Detroit, has awarded a general contract to the H. G. Christman Co., Stevens Building, for a new two-story operating building, 50 x 130 ft., to cost $50,000.

The Rex Refrigerator Co., Lansing, Mich., is said to be planning expansion and proposes to take over a local building for this purpose. Additional equipment will be installed.

The Millspaugh & Irish Corporation, Indianapolis, manufacturer of taxicab automobile bodies, has acquired property at Detroit from Dodge Brothers, Inc., and will establish a branch plant. The two factories in Indianapolis will be continued in service.

The Komnick Machinery Co., 1010 Lafayette Building, Detroit, has been organized to make machinery and equipment for the manufacture of cement roofing brick and slag brick based upon patents held by F. Komnick, Maschinenfabrik, Elbing, East Prussia, Germany. It will also build equipment for the making of Ternolite asbestos and cement, fireproof and waterproof shingles. The company plans to build factories in the United States and Canada, one of which has just been completed in Montreal and which will

be put in operation this month. Albert F. H. Seelig, industrial engineer, 908 Rialto Building, St. Louis, has been appointed designing and construction engineer in charge of the company's operations west of the Mississippi River.

The Newton Steel Co., Youngstown, Ohio, has removed its Detroit offices from the Dime Bank Building to 11-234 General Motors Building.

Cleveland

CLEVELAND, Dec. 6.

MACHINE tool sales were light the past week and with inquiries also falling off the December outlook is not very promising. Business is still confined almost wholly to single machines. Buyers who have been figuring on additional equipment now show a disposition to defer purchases until the new year. The Detroit market is inactive, but it is expected that extensions contemplated by automobile builders will bring out some good orders early in the year.

The Hobart Mfg. Co., Troy, Ohio, has taken bids for a three-story factory addition, 62 x 135 ft.

The Ohio Rubber Co., Willoughby, Ohio, has placed a general contract with the Austin Co., Cleveland, for a one-story extension, 90 x 160 ft.

The Southern Wheel Co., Atlanta, Ga., will erect a branch carwheel plant in Toledo, Ohio, and has placed the general contract with A. Bentley & Sons, Toledo.

W. E. Wright, Akron, Ohio, has placed contract with Joseph Jareb for a two-story and basement addition, 32 x 110 ft., to be occupied by the Akron Parts Co.

The Baltimore & Ohio Railroad is having plans prepared for a 10-stall addition to its round house at Willard, Ohio. L. P. Kimble, Baltimore, Md., is the company's architect.

The Galion Metallic Walk Co., Galion, Ohio, has placed contract for a one-story addition.

The Cleveland Trencher Co., St. Clair Avenue, Euclid, Ohio, has awarded contract for a one-story building, 50 x 60 ft.

The Electric Public Service Co., Findlay, Ohio, has concluded negotiations for the purchase of the Colorado Central Power Co., operating at Denver and vicinity, and plans extensions and betterments. The company has followed a recent bond issue of $1,000,000 with a preferred stock issue of $500,000, a portion of the proceeds to be used for the acquisition and expansion. R. A. Pratt is president.

The Greenford Township Board of Education, Greenford, Ohio, contemplates the installation of manual training equipment in its proposed new high school, reported to cost about $110,000, for which an architect will soon be selected.

The Firestone Foundry & Mfg. Co., Ashland, Ohio, has been incorporated by J. H. Firestone, E. M. Armstrong and others with a capital stock of $50,000 and plans the erection of a foundry next spring

Gulf States

BIRMINGHAM, Dec. 6.

A SITE on Laurel Street, Beaumont, Tex., has been acquired by the Boykin Machinery & Supply Co., manufacturer of oil well equipment, for a one-story addition, 75 x 200 ft., to cost about $50,000. Work will begin in January.

The Shell Island Products Co., New Orleans, recently formed with a capital of $250,000, is contemplating the erection of a new plant for the production of agricultural lime and road materials, using oyster shells as source of raw material, estimated to cost $175,000 with crushing, pulverizing and other machinery.

The Guarantee Motor Co., Romana Street, San Antonio, Tex., will soon begin the construction of a new three-story service, repair and garage building, 110 x 185 ft., to cost about $100,000 with equipment. H. P. Smith, National Bank of Commerce Building, is architect.

Luther A. Day, Sherman, Tex., and associates are organizing a company to establish a local plant for the manufacture of paper boxes and containers, with initial works to cost close to $25,000 with machinery.

The Superior Lime & Hydrate Co., Pelham, Ala., has plans for immediate extensions in its plant, including the installation of four new kilns and other equipment for hydrated lime production, to cost more than $75,000. H. G. Bridgewater is president.

The Dalhart Ice & Electric Co., Dalhart, Tex., is planning the construction of a new one-story electric light and power house, to cost in excess of $100,000 with equipment. The company is also contemplating the erection of a new ice-manufacturing plant to develop a daily capacity of 80 tons. A pumping plant will be installed, with three electric-operated pumping units. The entire project will cost close to $200,000.

The Herpel-Gillespie Motor Co., 720 East Houston Street, San Antonio, Tex., will install a machine and repair shop on the second floor of a proposed new two-story service, garage and sales building, 110 x 200 ft., to cost about $90,000. The Kelwood Co., Travis Building, is architect.

The City Council, Fort Worth, Tex., is considering a recommendation of O. E. Carr, city manager, for the construction of a municipal electric light and power plant, to cost in excess of $200,000 with equipment.

The S. J. Lomax & Son Mfg. Co., Rouston, La., plans the purchase of additional tools for its woodworking plant, including a shaper, mortiser, tenoning machine and other equipment.

The Board of Aldermen, Franklin, La., is asking bids until Dec. 16 for equipment for extensions and improvements in the municipal electric lighting plant, including one 400 to 500-hp. Diesel oil engine complete; one 300 to 375-kva. engine type alternator; switchboard equipment, control panels, etc. C. Aucoin is secretary. Henry A. Mentz, Hammond, La., is consulting engineer.

The Jasper Ice & Cold Storage Co., Jasper, Fla., has plans under advisement for extensions to double, approximately, the present capacity, to cost in excess of $30,000 with equipment.

The Hughes Tool Co., 300 Hughes Street, Houston, Tex., manufacturer of oil well equipment, etc., has work under way on extensions and improvements to cost about $65,000, including the installation of additional machinery. Howard Hughes, Jr., is president.

The Phillips-Burtoff Mfg. Co., Nashville, Tenn., manufacturer of hot air furnaces, has established an agency in Birmingham. Heretofore its products were handled by local plumbing and heating companies.

St. Louis

ST. LOUIS, Dec. 6.

BIDS will soon be asked by the American Ice Co., Spring and Wyandotte Streets, Kansas City, Mo., for a new one-story plant, 80 x 150 ft., to cost $45,000 with equipment. Hans Von Unwerth, Finance Building, is consulting engineer.

The Ozark Power & Water Co., Joplin, Mo., has applied for permission to issue bonds for $750,000, a portion of the proceeds to be used for extensions and improvements in power plant and transmission lines.

The Public Service Co. of Oklahoma, Tulsa, has plans for a new steam-operated electric generating station at Weleetka, Okla., with initial output of 15,000 kw., to cost in excess of $500,000 with transmission lines. Sargent & Lundy, 72 West Adams Street, Chicago, are engineers.

The Common Council, Talihina, Okla., is said to be planning the installation of pumping equipment in connection with proposed extensions in the municipal waterworks, estimated to cost $60,000.

The Arkansas Power & Light Co., Pine Bluff, Ark., is disposing of a bond issue of $18,000,000, a portion of the proceeds to be used for extensions and improvements, including the acquisition of additional properties. H. C. Couch is president.

The Common Council, Spring Hill, Kan., is considering the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks, to cost $35,000. E. T. Archer & Co., New England Building, Kansas City, Mo., are engineers.

The City Council, Ponca City, Okla., has plans for a new municipal electric light and power plant, replacing the present station, estimated to cost about $300,000. A special election is being arranged to vote bonds in this amount. A portion of existing equipment will be used and new engines and other machinery purchased. C. E. Norton is city clerk.

The Missouri Pacific Railroad Co., St. Louis, will soon begin the construction of a new mechanical coaling plant at Washington, Mo., to cost $60,000. E. A. Hadley is chief engineer.

The Sedan Electric Light & Power Co., Sedan, Kan., has plans under way for a new ice-manufacturing and cold storage plant, to cost about $60,000 with equipment. W. L. Collier is general manager.

The Board of Education, Topeka, Kan., is said to be planning the installation of manual training equipment in its proposed two-story junior high school to cost $175,000, for which preliminary plans are being drawn by Thomas W. Williamson & Co., Central National Bank Building, architects.

W. T. Neligh, West Point, Neb., and associates are planning the construction of a hydroelectric generating station to cost about $225,000 with equipment.

The City Ice Co., Twenty-first and Campbell Streets, Kansas City, Mo., is planning to remodel its storage plant at Kansas City, Kan., converting the structure for ice-manufacturing. Considerable new machinery will be installed.

Milwaukee

MILWAUKEE, Dec. 6.

INQUIRY and sales of machine tools the past week showed some improvement over those in recent weeks, although volume is lacking. Locally, there is a dearth of important industrial construction requiring large tool requirements, but a steady call is noted for tools for replacement.

The Northern States Power Co., Minneapolis, has completed plans for the construction of a $3,000,000 hydroelectric generating plant with a capacity of 18,000 kw., on the Chippewa River at Chippewa Falls, Wis. The same interests own and operate a 32,000-kw. plant on the same stream at Wissota, not far from Chippewa Falls. The project is in charge of the Byllesby Engineering & Managament Corporation, Chicago.

The Milwaukee Gas Tool Corporation, Milwaukee, has been incorporated with 1000 shares of no-par common stock, to manufacture metal appliances and specialties for the gas industry. The principals are represented by Ralph M. Hoyt and associated attorneys, 209 Grand Avenue. Plans have not fully matured, it is stated.

The LaCrosse Plow Co., LaCrosse, Wis., has resumed the operation of its plant after a cessation of activities for some time, pending a reorganization of its finances. B. C. Smith, president Smith Mfg. Co., LaCrosse, is temporarily in general charge of affairs as trustee. New working capital has been provided and some retooling is being done.

The Cedar Grove, Wis., Tool & Forge Co. has been incorporated with a capital stock of $35,000 to engage in the general foundry and machine shop business. Detailed plans will be forthcoming shortly, it is stated. The principals are G. W. Hyink, E. A. Spaulding and H. C. Gahn, all of Cedar Grove.

The Allis-Chalmers Mfg. Co., Milwaukee, has purchased the flour mill machinery business of Nordyke & Marmon, Inc., Indianapolis, and will remove the equipment to Milwaukee where the product of the latter will be made in the future. Nordyke & Marmon, Inc., was owned by the Marmon Motor Car Co. and was founded in 1851 as the Nordyke & Marmon Co. In 1902 the company began the manufacture of motor cars, and in a recent reorganization the automobile business was placed in a separate unit known as the Marmon Motor Car Co., and the flour mill division continued under the name of Nordyke & Marmon, Inc.

Pacific Coast

SAN FRANCISCO, Dec. 1.

THE New Metal Products Co., Doyle and Fifty-Ninth Streets, Oakland, Cal., manufacturer of underground storage tanks, ranges, boilers, etc., has acquired property adjoining its works and plans the construction of a one-story addition to cost about $25,000 with equipment.

The City Council, Alhambra, Cal., is planning an early call for bids for the municipal waterworks, including deep-well turbine pump, booster pumping unit and accessories. T. B. Downer is water superintendent.

The Dixie Power Co., St. George, Utah, has plans under way for a new hydroelectric generating station to cost about $200,000 with machinery.

The Troy Motor Sales Co., Los Angeles, local representative for the Nash automobile, has acquired property at Wilshire Boulevard and Shatto Place, and plans the construction of a new five-story service, repair and sales building, 150 x 208 ft., to cost about $150,000 with equipment.

The Pacific Gas & Electric Co., 245 Market Street, San Francisco, is completing plans for the erection of a one-story machine shop with adjoining mechanical and electrical repair building at San Jose, Cal., to cost about $60,000.

The Southern California Edison Co., Los Angeles, has plans under way for a new one-story power substation at Huntington Beach, Cal., to cost $135,000 with equipment.

The Pacific Electric Mfg. Co., 5815 Third Street, San Francisco, manufacturer of electrical appliances, is completing plans for a new one-story plant, 50 x 100 ft., to cost about $25,000 with equipment.

The City Council, Moroni, Utah, is considering plans for a municipal electric light and power house, to cost approximately $30,000 with equipment.

Kenneth MacDonald, Jr., Spring Arcade Building, Los Angeles, architect, is preparing plans for a new thirteen-story automobile service, repair and garage building, 80 x 155 ft., estimated to cost $500,000 with equipment.

The Water and Power Commission, 207 South Broadway, Los Angeles, is asking bids until Dec. 21, for a motor-driven centrifugal pump, specification 799. James P. Vroman is secretary.

The Magnavox Co., 2725 East Fourteenth Street, Oakland, Cal., manufacturer of radio equipment, has acquired property at Emeryville, and contemplates the early erection of a new plant to cost close to $200,000 with machinery. The present factory has been sold, and equipment will be removed to the new location.

The City Council, Aberdeen, Wash., is planning to begin superstructure soon for a proposed municipal electric light and power plant in the Wynooche Valley section, for which an appropriation of $2,000,000 recently was voted. W. S. Watkins is water superintendent, in charge.

C. F. Braun & Co., Alhambra, Cal., manufacturers of gasoline absorption plants and equipment, have begun the erection of a machine shop, 80 x 118 ft., and a garage, 110 x 129 ft., to cost $30,000 exlusive of equipment.

The Merced Ice & Cold Storage Co., Merced, Cal., will erect an addition and install machinery at a cost of $30,000.

Owing to the demand for quantity castings, the Baker Iron Works, 912 North Broadway, Los Angeles, is modernizing its foundry by installing the latest types of equipment. Recent purchases include a large Osborn jar roll-over pattern draw molding machine, two small jar squeeze molding machines and several overhead sand hoppers.

The Hallet Mfg. Co., Los Angeles, builder of marine engines and air compressors, will erect a factory on a 4-acre site in Inglewood, Cal., at a cost of $200,000. Upon completion the company will move to the new location.

The Prudden Metal Airplane Co., with headquarters in San Diego, Cal., organized for the principal purpose of manufacturing all-steel airplanes, has obtained a permit from the State Corporation Commissioner to issue and sell 100 shares of its preferred and 500 shares of its common stock, the company being capitalized at $200,000. George H. Prudden, formerly chief engineer and superintendent of construction for the Stout Metal Airplane Co., a subsidiary of the Ford Motor Co., is at the head of the new concern. The company is required under the permit, to impound the first $300,000 net received from stock sales in order that it may start business on a fair financial basis.

The United States Industrial Alcohol Co.'s branch at Anaheim, Cal., will spend approximately $250,000 at once for equipment in a program to increase the capacity of its output from 500,000 gal. to 1,000,000 gal. a year. No new buildings will be added. H. S. Rubens is president.

Indiana

INDIANAPOLIS, Dec. 6.

VONNEGUT, BOHN & MUELLER, Indiana Trust Building, Indianapolis, architects, are completing plans for a one-story and basement automobile service, repair and garage building, 75 x 210 ft., to cost $85,000 with equipment.

The Louisville & Nashville Railroad Co., Louisville, has awarded a general contract to the M. J. Hoffman Construction Co., Furniture Building, Evansville, Ind., for its new engine house and machine shops at Evansville, to cost close to $200,000 with equipment.

The Ditsch Sales & Garage Co., 233 West Washington Street, South Bend, Ind., has plans for a new one-story machine shop and garage, to cost close to $60,000 with equipment. Austin & Shambleau, 111 North Lafayette Street, are architects.

The Turner Brothers Co., Terre Haute, Ind., manufacturer of glass bottles, etc., will soon begin superstructure for a one-story and basement addition, 100 x 200 ft., to cost $140,000 with equipment, for which erection contract recently was let to the G. W. North Construction Co., Terre Haute.

The State Line Generating Co., 72 West Adams Street, Chicago, Samuel Insull, president, is arranging for the early erection of the first unit of its steam-operated electric generating plant on the State line between Indiana and Illinois, estimated to cost $10,000,000 with transmission lines. Other units will be built later. Graham, Anderson, Probst & White, 80 East Jackson Boulevard, Chicago, are architects.

Canada

TORONTO, Dec. 6.

MACHINE tool sales are beginning to fall off in this market partly due to the approaching holidays. Inquiries, however, are good and dealers and builders look for continued demand immediately after the turn of the year. Buying by the Canadian National Railways for their Toronto shops has increased sales considerably the past few weeks and it is reported that smaller lists are out or being prepared for tool replacements in other shops. While there has been a falling off in demand from automobile manufacturers, garages and automobile repair shops have been buying single tools. Wood-working tools have been quite active this fall and some good business on this account is in prospect.

The Abitibi Power & Paper Co., Iroquois Falls, Ont., is planning the erection of a newsprint mill at Cochrane, Ont., to cost $600,000.

Bids will be received by the Board of Water and Light Commissioners, Oakville, Ont., until Dec. 14, for one low lift turbine pump and electric motor and one high lift turbine pump and electric motor. W. N. Robinson is chairman of the board, and George H. Power, Toronto, is engineer.

Nesbitt, Thomson & Co., Ltd., 145 St. James Street, Montreal, contemplates the construction of a paper mill between Deschenes and Aylmer, Que., to cost $4,000,000.

The Canada Cement Co., Ltd., Phillips Square, Montreal, has started work on the erection of a plant at Lakefield, Ont., comprising 10 buildings. The company will purchase material and complete equipment.

The Northern Crane Works, Ltd., Walkerville, Ont., has removed its Toronto offices to room 415, Metropolitan Building, Adelaide and Victoria Streets.

Western Canada

The City Council, Edmonton, Alta., proposes to spend $90,000 on improvements to the waterworks plant and system. A by-law will be submitted this month in this connection. A. W. Haddow is city engineer.

The City Council, Nanaimo, B. C., is contemplating improvements to the waterworks plant to cost $70,000. H. Hackwood is city clerk.

Foreign

THE General Motors Corporation, General Motors Building, Detroit, will construct and operate a new assembly plant at Stockholm, Sweden, where about 5½ acres has been purchased. Work will soon begin on the initial unit, to be equipped for an output of about 500 completed cars per month. Facilities will be provided for employment of about 450 men. The entire project is reported to cost in excess of $700,000 with equipment.

A railroad operating in the vicinity of Copenhagen, Denmark, known as the Amagerbanen, is arranging for the early electrification of a portion of its lines. Part of the necessary funds will be furnished by the Government. The American Consulate, Copenhagen, E. A. Johnson, vice-consul, has information regarding the project.

Bids are being asked by the Post and Telegraphs Department, Melbourne, Australia, until Jan. 18 for a quantity of switchboard cable.

The Ministry of Public Works, Czechoslovakia, at Prague, is developing plans for proposed hydroelectric power plants in the Province of Bohemia, including two primary projects on the Elbe River, near Brandys and Smirice, and on the Moldau River at Troja, Libsice, and vicinity. Information at the Bureau of Foreign and Domestic Commerce, Washington, reserved information No. 224934; also at the American Consulate, Prague, Charles S. Winans, consul.

In connection with an irrigation program, the Government of Mexico, Mexico City, is completing plans for the construction of a power dam across the Rio Lerma at Tepuxtepec, municipality of Contepec, for a proposed hydroelectric power development. The entire irrigation project will cost in excess of $5,000,000. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, reference Mexico No. 43917. The American Consulate, Mexico City, George Wythe, acting commercial attaché, also has data.

The Adelaide Oil Exploration Co., Adelaide, Australia, has formed the Chilean Oil Fields, Ltd., a subsidiary, to operate in Chile. The new organization is completing plans for the development of oil properties in the Province of Antofagasta, Chile, to include the installation of drilling machinery, storage tanks and distributing equipment, with pipe line construction, etc. The American Consulate, Santiago, Chile, C. C. Brooks, acting commercial attaché, has information regarding the project.

The Public Works Department, Wellington, New Zealand, is asking bids until Feb. 15 for transformers and auxiliary electrical equipment for the Waikato power project.

Industrial Finances

The Bullard Machine Tool Co., Bridgeport, Conn., has sold $600,000 6 per cent five-year notes to bankers, who are offering them for public subscription at $102 and accrued interest. Money derived from the sale of the notes, together with $750,000 cash to be taken from the assets of the concern, will be used to retire the outstanding balance of $1,500,000 6½ per cent bonds dated 1922.

Bankers are offering for sale 3500 shares of 7 per cent cumulative preferred stock of the Perkins Machine & Gear Co., Springfield, Mass., successor to the Perkins Appliance Co. The shares are part of a $500,000 issue, of which $150,000 is outstanding. In addition to the preferred stock capitalization, the company has 15,000 shares of no par value common stock. Adolph W. Gilbert, president Chapman Valve Mfg. Co., Springfield, is chairman of the board. John Oakley, for many years works manager Bausch Machine Tool Co., will be made vice-president and works manager of the Perkins Machine & Gear Co.

The Hillman Coal & Coke Co., Pittsburgh, announces that the Hillman Coal & Coke Co., Toronto, Ont., which recently became insolvent, is not a subsidiary of the Hillman Coal & Coke Co., of Pennsylvania, has no connection with the latter company, and that no officer, director or stockholder of the Pennsylvania company has ever had any interest in the Canadian company.

NEW TRADE PUBLICATIONS

Circular Slide Rule.—Fowler & Co., 53 New Bailey Street, Manchester, England. Leaflets describing circular slide rules and other forms of calculators for the use of engineers and others needing to make large numbers of calculations in as short a time as possible.

Motor-Starting Appliances.—Allen-Bradley Co., Milwaukee. Several pamphlets dealing with resistance starters and starting switches of various descriptions, designed for throwing into the line different types of alternating current motors.

Internal Combustion Engines.—Climax Engineering Co., Clinton, Iowa. Four-page folder describing four-cylinder and six-cylinder engines listed as standard by the Underwriters Laboratories for use with fire pumps. The two sizes are designed for 750-gal. and 1000-gal. pumps respectively.

Cutting-Off Tool.—Luers, Inc., Cincinnati. Leaflet gives prices and advantages of the company's latest cutting-off tool. It is of new design and is made in six sizes.

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Hack Saw.—Consolidated Tool Works, Inc., New York. Circular describes the new patented design of a perfect balance hack saw which affords a firm grip. All parts of the new tool, the circular says, are held together when the blade is not in place.

Pulverized Coal.—Grindle Fuel Equipment Co., Harvey, Ill. How pulverized coal cuts the cost of malleable iron castings is the subject of a 32-page magazine, containing illustrations and diagrams. An explanation of how such fuel saves time, labor, cost, metal, and furnace lining is given.

Heavy Duty Shovels.—Osgood Co., Marion, Ohio. Twenty-four page booklet, illustrated, describes Osgood gasoline and electric shovels, cranes, back hoes, and dragline excavators.

Meters.—Bachrach Industrial Instrument Co., Pittsburgh. Bulletin 253 of 8 pages analyzes the composition of internal combustion motor exhaust gases, and the problems arising therefrom. It describes how the Bachrach Co. Meter, S & H type, by enabling measurement of the exhaust gases, helps to solve the difficulties.

Screw Machines.—Brown & Sharpe Mfg. Co., Providence, R. I. Folder illustrates and explains Brown & Sharpe types of automatic screw machines outlining the special capacities of each. Turret forming machines and tool grinding machines are also described.

Cargo Pumps.—Wilson-Snyder, Pittsburgh. Folder gives diagrams of Wilson-Snyder cargo pumps, showing the manner of operation. A table tells the diameter of the steam cylinder, the diameter of the piston, the length of stroke, the number of barrels per hour, and the weights of the different pumps.

Casters.—Service Caster & Truck Co., Albion, Mich. Sixteen page catalog gives specifications and prices of the various types of casters manufactured by the company with pictures and descriptions.

Gaskets.—Goetze Gasket & Packing Co., New Brunswick, N. J. The 1926 catalog of 42 pages considers the costs of leaks and how they may be prevented. Tables give the types of Goetze gaskets with their styles, sizes, and prices. Five pages are devoted to packings for stuffing boxes.

Storage Battery Control Equipment.—General Electric Co., Schenectady, N. Y. Leaflet describes by means of reading matter and numerous illustrations the complete new line of unit control sections for battery charging service brought out by the General Electric Co.

Polyphase Induction Motors.—Allis-Chalmers Mfg. Co., Milwaukee. Bulletin 1134 of 4 pages describes the characteristics of the latest addition to Allis-Chalmers motor design, the enclosed, self-ventilating type of polyphase induction motor. Diagrams and illustrations help to explain the new motor.

Parallel Drives.—Boston Gear Works Sales Co., Norfolk Downs, Mass. Pocket-size catalog of 64 pages gives tables of sizes, specifications and prices of hardened steel spur gears for parallel drives. Illustrations show the applications of the gears.

Drill Sharpeners.—Sullivan Machinery Co., Chicago. The importance of drill sharpeners in shaft sinking and tunneling is discussed in a 32-page booklet and catalog illustrating and describing Sullivan drills, and giving their specifications and uses.

Foundry Flasks.—Truscon Steel Co., Youngstown, Ohio. Pamphlet of 45 illustrated pages gives a complete presentation of the company's products, including flasks, clamps, bottom boards, core boxes, etc.

Steam Generator.—La Mont Corporation, 200 Fifth Avenue, New York. Illustrated pamphlet of 16 pages describes the general features of the company's waste heat steam generator.

Furnace Lining.—Botfield Refractories Co., Philadelphia. Leaflet describes "Adamant" for furnace linings and brick repairs.

Heat Treating Apparatus.—Stanley P. Rockwell Co., Hartford, Conn. Bulletin No. 2610B gives a few typical hardening curves obtained with the Rockwell dilatometer.

Flow Meter.—Brown Instrument Co., Philadelphia. Four-page leaflet describes an electric flow meter using the inductance bridge principle.

Nickel Steel.—International Nickel Co., New York. An eight-page leaflet, entitled "Nickel Steel" and well illustrated, calls attention to the hardness, toughness and resistance to wear of alloy steels containing nickel.

Combustion and Temperature Control.—F. J. Ryan & Co., Philadelphia. A 12-page bulletin describes the Ryan system of automatic combustion and temperature control. It is well illustrated and outlines the various features and advantages of the system.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

To us, Ivory Soap has always symbolized purity, and we wished that Messrs. Procter & Gamble, our subscribers, had manufactured a cast steel soap, so that they might have taken part in the symposium on pure metals conducted recently by the American Electrochemical Society.

Ivory, as you will recall, is advertised as 99.44 per cent pure. But it pales alongside of lead 99.99943 per cent pure, and zinc 99.99996 per cent. Both aspire for the laurels of the well-known "driven snow," hitherto unchallenged purity champion.

Toto, the famous clown, had a trick of appearing very busy and actually doing nothing. He would rush wildly around the ring, getting in everyone's way and always arriving just too late to be of any help.

Good circus stuff. Dr. Julius Klein's mention of an industry that had a $14,000,000 turnover last year and made only $130,000 brings Toto to mind. As the Doctor says succinctly, "All too frequently do we find otherwise competent firms misinterpreting activity for prosperity."

"Not, 'How's business?' but 'How are profits?'"

The balder I get the more I am convinced that long time forecasts should be taken cum grano salis.

Back in the middle of 1920, when black clouds were first appearing on the industrial horizon and when prices began to fall like a stricken airplane, it was popularly predicted that wages would be deflated.

What actually has happened? *Prices are 25 per cent lower, and wages are 25 per cent higher.*

As Solomon wisely remarked, "You never can tell."

Subscriber writes: "Discontinue our subscription on account of *disillusion* of partnership."

Well, there really isn't a great deal of difference.

The percentage of male children between four and ten years who desire to become "railroaders" when manhood is attained will be considerably reduced before long. For the semaphore is doomed, says the American Railway Association. The brightly painted arms are being displaced by lights, which are said to be cheaper and more effective.

Worse yet, it is only a question of time before the click of the telegraph instrument will be heard no more. The telephone is declared to be more satisfactory.

Is romance going out of the railroad business?

A. H. D.